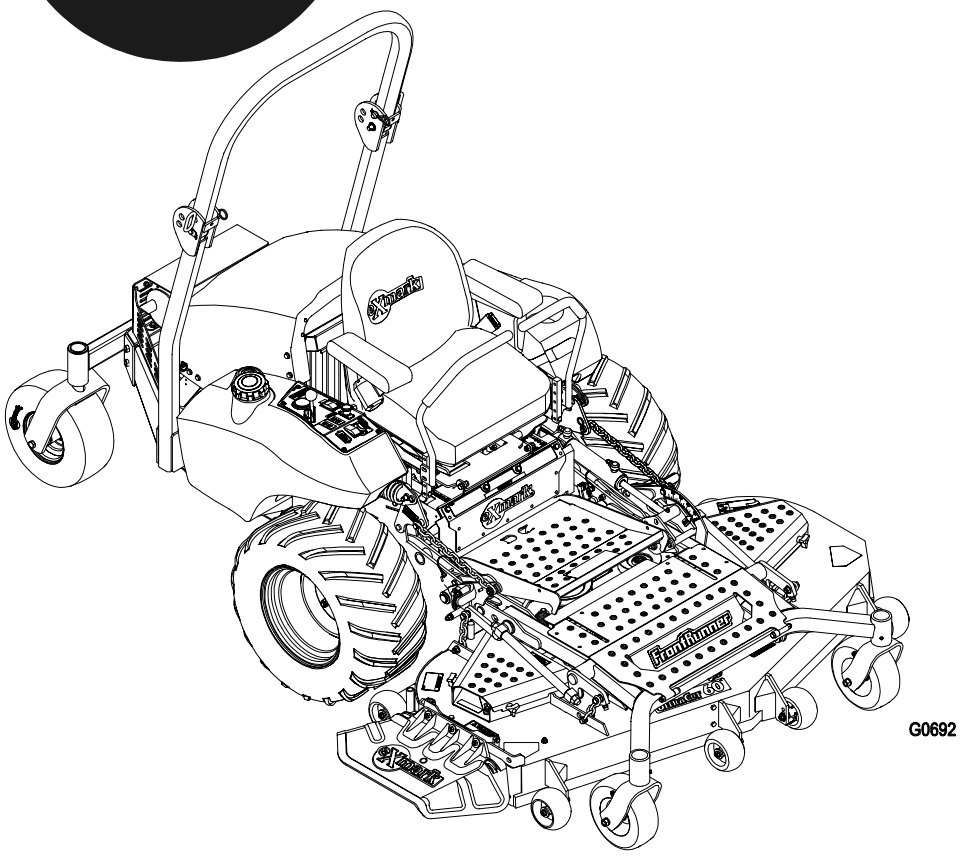
For Serial Nos. 600,000 & Higher

eXmark® MFG. CO. INC.

OPERATOR'S MANUAL



FRONTRUNNER™

DIESEL MODEL

CONGRATULATIONS on the purchase of your new Exmark equipment. This product has been carefully designed and manufactured to give you a maximum amount of dependability and years of trouble-free operation. If additional information is needed, or should you require trained mechanic service, contact your authorized Exmark equipment dealer or distributor. If you need to order replacement parts from your dealer, always give the model number and serial number of your equipment as well as the part number, description and quantity of the part needed.

The Serial No. plate is located on the right side of the unit under the fuel tank. For ease of ordering and reference, we suggest that you record the information requested in the following identification table.

Place Model No. and Serial No. Label Here
(Included in Literature Pack)
or Fill in Below

Model No. _____

Serial No. _____

Date Purchased _____

Part No. 109-4289 Rev. A

WARNING

POTENTIAL HAZARD

- This product is a piece of power equipment.

WHAT CAN HAPPEN

- Failure to follow safe operating practices can result in serious operator injury or even death.

HOW TO AVOID THE HAZARD

- Keep all shields, guards, and safety devices (especially the grass discharge system) in place and in proper working condition.
- Stop engine, wait for all moving parts to stop and engage parking brake. Disconnect battery ground or remove key before adjusting, servicing, or performing maintenance.
- If mower deck becomes clogged, stop engine, wait for all moving parts to stop and engage parking brake. Disconnect battery ground or remove key before cleaning blockage.
- Keep hands, feet, and clothing away from power driven parts.
- Keep off mower unless seat platform is provided.
- Keep others off mower.

WARNING

POTENTIAL HAZARD

- Diesel fuel is harmful or fatal if swallowed. Long-term exposure to vapors has caused cancer in laboratory animals.

WHAT CAN HAPPEN

- Failure to use caution may cause serious injury or illness.

HOW TO AVOID THE HAZARD

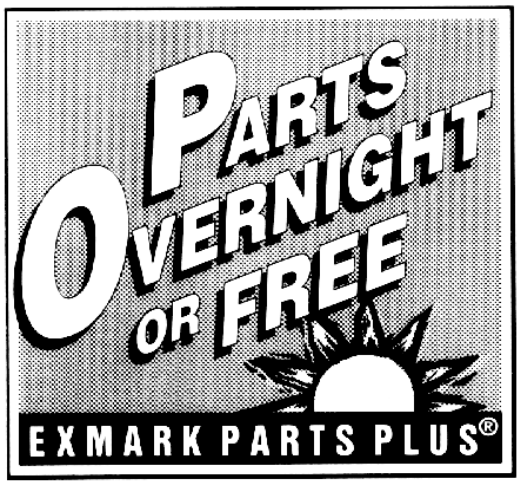
- Avoid prolonged breathing of vapors.
- Keep face away from nozzle and fuel tank/container opening.
- Keep away from eyes and skin.
- Never siphon by mouth.

The enclosed Engine Owner's Manual is supplied for information regarding The U.S. Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance and warranty.

Keep this engine Owner's Manual with your unit. Should this engine Owner's Manual become damaged or illegible, replace immediately. Replacements may be ordered through the engine manufacturer.

EXMARK PARTS PLUS® PROGRAM

EFFECTIVE DATE: September 1, 1995



Program

If your Exmark dealer does not have the Exmark part in stock, Exmark will get the parts to the dealer the next business day or the part will be FREE* Guaranteed!!

How the Program Works

1. If dealer does not have part in stock for a "down" unit at the time of request by customer, the dealer contacts his distributor by 1:00 p.m., local time, and requests Exmark Parts Plus® shipment of six (6) line items or less.

2. Distributor ships part(s) to dealer or customer, as requested by dealer, same day, overnight UPS Distributor bills dealer for part and freight charges where applicable.

3. If distributor does not have the part(s) in stock to satisfy Exmark Parts Plus® order, he contacts Exmark by 3:00 p.m., central time, with an Exmark Parts Plus® order of six (6) line items or less.

4. If order is received by 3:00 p.m. central time, Exmark ships part(s) direct to dealer or customer, as requested by distributor, same day, overnight UPS, Exmark bills the distributor for parts and shipping charges, where applicable.

5. The customer pays for the part and freight if it is shipped under the Exmark Parts Plus® and if it arrives in accordance to the program.

6. Who pays for the part and freight if it fails to arrive overnight in accordance to the program?

   A. Under any circumstance the customer does not pay.

   B. If the part does not arrive overnight due to:

      1. The dealer not submitting the Exmark Parts Plus® order to his Exmark distributor by 1:00 p.m., the dealer pays for the part and freight.

      2. The Distributor being unable to ship the part the same day or not submitting the Exmark Parts Plus® order to Exmark by 3:00 p.m., central time, the Distributor pays for the part and freight.

      3. Exmark being unable to ship the part and the Exmark parts order is received by 3:00 p.m., central time, Exmark pays for the part and freight.

      4. If the part does not arrive overnight due to the shipper (UPS), the shipper pays for the freight and Exmark pays for the part.

The following restrictions apply -- The Exmark Parts Plus® Program is available only through participating Exmark Dealers and applies only to orders submitted on this program Monday through Thursday. Parts Plus service is available only in the 48 contiguous United States. UPS has initiated a Saturday delivery program to many areas of the continental United States and can be requested for an overnight shipment on Friday to be delivered Saturday. The next day air charge, plus the Saturday delivery fee will be the responsibility of the purchaser. Exmark Mfg. will assume no responsibility for Saturday delivery shipments. To qualify, all Exmark Parts Plus® orders must be received by Exmark by 3:00 p.m., central time. Orders must be six (6) line items or less. Exclusions from the Exmark Parts Plus® Program are: Any wholegood or accessory in its entirety, engines and engine replacement parts, 5-speed Peerless transmissions and 5-speed transaxles, hydraulic or hydrostatic wheel motors, cutter decks and engine decks or any item exceeding United Parcel Service size and weight restrictions.

Due to UPS restrictions, aerosol spray paint is considered a hazardous material and cannot be shipped via UPS next day or Second Day Air.

Exmark Manufacturing stocks a limited supply of parts for transaxles, pumps and wheel motors. These parts can be ordered for Next Day Air shipment but will not be guaranteed per the Parts Plus Program.

CONGRATULATIONS on the purchase of your Exmark mower. This product has been carefully designed and manufactured to give you a maximum amount of dependability and years of trouble-free operation.

OPERATOR'S MANUAL

This manual contains operating, maintenance, adjustment, and safety instructions for your Exmark mower.

BEFORE OPERATING YOUR MOWER,
CAREFULLY READ THIS MANUAL IN ITS ENTIRETY.

By following the operating, maintenance, and safety instructions, you will prolong the life of your mower, maintain its maximum efficiency, and promote safe operation.

If additional information is needed, or should you require trained mechanic service, contact your authorized Exmark equipment dealer or distributor.

All Exmark equipment dealers and distributors are kept informed of the latest methods of servicing and are equipped to provide prompt and efficient service in the field or at their service stations. They carry ample stock of service parts or can secure them promptly for you from the factory.

All Exmark parts are thoroughly tested and inspected before leaving the factory, however, attention is required on your part if you are to obtain the fullest measure of satisfaction and performance.

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1. SAFETY

1.1 SAFETY ALERT SYMBOL

This SAFETY ALERT SYMBOL is used both in this manual and on the machine to identify important safety messages which must be followed to avoid accidents. This symbol means:

ATTENTION! BECOME ALERT!

YOUR SAFETY IS INVOLVED!

The safety alert symbol appears above information which alerts you to unsafe actions or situations and will be followed by the word **DANGER**, **WARNING**, or **CAUTION.**

DANGER: White lettering / Red background. Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

WARNING: Black lettering / Orange background. Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

CAUTION: Black lettering / Yellow background. Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.

1.2 TRAINING

1.2.1 Regard the Exmark mower as a piece of power equipment and teach this regard to all who operate this unit.

1.2.2 Read the instructions carefully. Familiarize yourself with the controls and the proper use of the equipment. If the operator(s) or mechanic(s) can not read English, it is the owner's responsibility to explain this material to them.

1.2.3 Do not allow operation of this machine by untrained personnel. Never allow children, teenagers, or people unfamiliar with these instructions to use the mower. Local regulations may restrict the age of the operator.

1.2.4 Avoid mowing while people, especially children, or pets, are nearby. Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.

1.3 PREPARATION

1.3.1 Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by Exmark.

1.3.2 The use of personal protective equipment, such as (but not limited to) protection for the eyes, ears, feet, and head is recommended.

CAUTION

POTENTIAL HAZARD

- This machine produces sound levels in excess of 85 dBA at the operator's ear when in operation.

WHAT CAN HAPPEN

- Exposure to sound levels of 85 dBA or above for extended periods of time can cause hearing loss.

HOW TO AVOID THE HAZARD

- Wear hearing protection when operating this machine.

1.3.3 While mowing, always wear substantial footwear and long trousers. Do not operate equipment when barefoot or when wearing open sandals.

1.3.4 Thoroughly inspect the area where the equipment is to be used and remove all stones, sticks, wires, bones, and other foreign objects which may damage the equipment or cause personal injury to the operator or bystanders.

WARNING

POTENTIAL HAZARD

- Engine exhaust contains carbon monoxide, which is an odorless deadly poison.

WHAT CAN HAPPEN

- Carbon monoxide can kill you.

HOW TO AVOID THE HAZARD

- Do not run engine indoors or in a small confined area where dangerous carbon monoxide fumes can collect.

DANGER

POTENTIAL HAZARD

- Diesel fuel is flammable.

WHAT CAN HAPPEN

- A fire from diesel fuel can burn you, others, and cause property damage.

HOW TO AVOID THE HAZARD

- *DO NOT* smoke while refueling, and stay away from an open flame or where fuel fumes may be ignited by spark.
- Refuel only outdoors.
- Store fuel in an approved container and keep it out of the reach of children.
- Add fuel before starting the engine. *Never* remove the cap of the fuel tank or add fuel when engine is running or when the engine is hot.
- Never fill the fuel tank so that the fuel level rises above a level that is 1/2” below the bottom of the filler neck to allow for fuel expansion and prevent fuel spillage.
- If fuel is spilled, *DO NOT* attempt to start the engine. Move away from the area of the spill and avoid creating any source of ignition until fuel vapors have dissipated.
- Do not operate without entire exhaust system in place and in proper working condition.

1.4 OPERATION

Although hazard control and accident prevention are partially dependent upon the design and configuration of the equipment, these factors are also dependent upon the awareness, concern, prudence, and proper training of the personnel involved in the operation, transport, maintenance, and storage of the equipment. It is essential that all Operator Safety Mechanisms be connected and in operating condition prior to use for mowing.

WARNING
POTENTIAL HAZARD ♦ Operating engine parts, especially the muffler, become extremely hot.
WHAT CAN HAPPEN ♦ Severe burns can occur on contact. ♦ Debris, such as leaves, grass, brush, etc. can catch fire.
HOW TO AVOID THE HAZARD ♦ Allow engine parts, especially the muffler, to cool before touching. ♦ Remove accumulated debris from muffler and engine area. ♦ Install and maintain in working order a spark arrester before using equipment on forest-covered, grass-covered, or brush-covered unimproved land.

WARNING
POTENTIAL HAZARD ♦ Hands, feet, hair, clothing, or accessories can become entangled in rotating parts.
WHAT CAN HAPPEN ♦ Contact with rotating parts can cause traumatic amputation or severe lacerations.
HOW TO AVOID THE HAZARD ♦ Do not operate the machine without guards, shields, and safety devices in place and working. ♦ Keep hands, feet, hair, jewelry, or clothing away from rotating parts.

1.4.1 Give complete, undivided attention to the job at hand.

1.4.2 Mow only in daylight or good artificial light, keeping away from holes and hidden hazards. ***NEVER*** carry passengers. ***DO NOT*** operate the mower when children or others are in the area.

1.4.3 When feasible, avoid operating the equipment in wet grass.

WARNING

POTENTIAL HAZARD

- Operating a FrontRunner tractor without an approved Exmark front mount attachment increases the possibility of forward tip over.

WHAT CAN HAPPEN

- Tip-over could cause serious injury or death.

HOW TO AVOID THE HAZARD

- When operating a FrontRunner tractor without an approved Exmark front mount attachment, observe the following:
  - Limit operation to minimum required to install a different front mount attachment.
  - Minimize speed and use extreme caution.
  - Only operate on a flat level surface.
  - Do not operate up or down a trailer ramp.
  - Avoid sudden acceleration or deceleration.

1.4.4 Use ***EXTREME*** caution when mowing and/or turning on slopes as loss of traction and/or tip-over could occur. The operator is responsible for safe operation on slopes.

DANGER

POTENTIAL HAZARD

- Mowing on wet grass or steep slopes can cause sliding and loss of control.

WHAT CAN HAPPEN

- Wheels dropping over edges, ditches, steep banks, or water can cause rollovers, which may result in serious injury, death or drowning.

HOW TO AVOID THE HAZARD

- Do not mow slopes when grass is wet.
- Do not mow near drop-offs or near water.
- Do not mow slopes greater than 15 degrees.
- Reduce speed and use extreme caution on slopes.
- Avoid sudden turns or rapid speed changes.

- See inside the back cover to determine the approximate slope angle of the area to be mowed.
- Use a walk behind mower and/or a hand trimmer near drop-offs, ditches, steep banks or water. This area can be dangerous, see Figure 1.

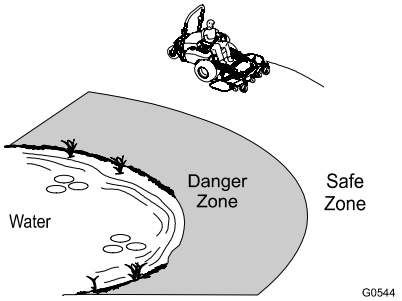


FIGURE 1

- Progressively greater care is needed as the slope increases.
- Always avoid sudden starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly off the slope.
- Avoid sudden stops when mowing downhill. Tractor may tip forwards.
- Be aware that loss of traction may occur going uphill. Weight transfer to the rear wheels may cause drive wheels to slip and cause loss of braking and steering.
- Watch for ditches, holes, rocks, dips, and rises that change the operating angle, as rough terrain could overturn the machine.
- Remove or mark obstacles such as rocks, tree limbs, etc. from the mowing area. Tall grass can hide obstacles.
- Use extreme care with attachments. These can change the stability of the machine and cause loss of control.
- Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.

1.4.5 A Rollover Protection System (roll bar) is installed on the unit.

DANGER
POTENTIAL HAZARD ♦ There is no rollover protection when the roll bar is down.
WHAT CAN HAPPEN ♦ Wheels dropping over edges, ditches, steep banks, or water can cause rollovers, which may result in serious injury, death or drowning.
HOW TO AVOID THE HAZARD ♦ Keep the roll bar in the raised and locked position and use seat belt. ♦ Lower the roll bar only when absolutely necessary. ♦ Do not wear seat belt when the roll bar is down. ♦ Drive slowly and carefully. ♦ Raise the roll bar as soon as clearance permits.

- Be certain that the seat belt can be released quickly if the machine is driven or rolls into ponds of water.
- Check carefully for overhead clearances (i.e. branches, doorways, and electrical wires) before driving under any objects and do not contact them.

1.4.6 Use ***EXTREME*** caution when backing up. **LOOK BEHIND YOU!**

1.4.7 Stop the blades when crossing surfaces other than grass and when transporting the mower to and from the area to be mowed.

1.4.8 Never operate the mower with damaged guards, shields, or covers. Always have safety shields, guards, switches, and other devices in place and in proper working condition.

1.4.9 ***DO NOT*** change the engine governor settings or overspeed the engine. Operating an engine at excessive speed may increase the hazard of personal injury.

1.4.10 Disengage PTO before starting engine.

1.4.11 Start the engine carefully with feet well away from the blades.

1.4.12 Keep hands, feet, and clothing away from rotating parts while the mower is being operated.

1.4.13 Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake:

- Before checking, cleaning or working on the mower.
- After striking a foreign object (inspect the mower for damage and make repairs before restarting and operating the mower).
- Before clearing blockages.
- Whenever you leave the mower.

Stop the engine and wait for all moving parts to stop. Engage parking brake:

- Before refueling.
- Before dumping the grass catcher.

1.4.14 Before stopping the engine, place the throttle control to the “slow” position. Allow the engine to run a minimum of 15 seconds; then stop the engine.

1.4.15 This mower was designed for one operator only. Keep all others away from mower during operation.

1.4.16 ***DO NOT*** mow with the discharge deflector raised, removed or altered unless there is a grass collection system or mulch kit in place and working properly.

1.4.17 ***DO NOT*** operate mower under the influence of alcohol or drugs.

1.4.18 Use extra care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

1.4.19 If jump starting is required:

a) connect the positive (+) power cable from the positive post on the booster battery to the positive terminal post on the starter solenoid switch (this post has the positive battery cable attached to it).

b) connect the negative or ground cable (-) from the negative post on the booster battery to the engine block as far away from the battery as possible.

c) disconnect battery cables in the reverse order after starting.

1.5 MAINTENANCE AND STORAGE

1.5.1 For engine maintenance, follow the engine manufacturer's recommendations precisely as stated in the engine manual.

1.5.2 Disconnect the battery cable from the negative battery post when the unit will be allowed to sit for more than 30 days without use.

1.5.3 Allowing batteries to stand for an extended period of time without recharging them will result in reduced performance and service life. To preserve optimum battery performance and life, recharge batteries in storage when the open circuit voltage drops to 12.4 volts.

Note: To prevent damage due to freezing, battery should be fully charged before putting away for winter storage.

1.5.4 Keep engine, engine area, and pump drive belt compartment free from accumulation of grass, leaves, excessive grease or oil, and other debris which can accumulate in these areas. These materials can become combustible and may result in a fire.

1.5.5 Store fuel in a container specifically designed for this purpose in a cool, dry place.

1.5.6 Keep the mower and fuel container in locked storage to prevent children from playing or tampering with them.

1.5.7 Diesel powered equipment or fuel containers should not be stored in a basement or any enclosed area where open pilot lights or heat appliances are present.

1.5.8 Maximum mowing results and safety can only be achieved if the mower is properly maintained and operated correctly.

1.5.9 Check all bolts frequently to maintain proper tightness.

1.5.10 Keep all guards, shields, and all safety devices in place and in safe working condition.

1.5.11 Frequently check for worn or deteriorating components that could create a hazard.

1.5.12 All replacement parts must be the same as or equivalent to the parts supplied as original equipment.

WARNING

POTENTIAL HAZARD

- Hydraulic fluid escaping under pressure can penetrate skin and cause injury.

WHAT CAN HAPPEN

- Fluid accidentally injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

HOW TO AVOID THE HAZARD

- Make sure all hydraulic fluid hoses and lines are in good condition an all hydraulic connections and fittings are tight before applying pressure to hydraulic system.
- The woven guards that protect the hydraulic hoses may deteriorate and wear over time. Check the guards frequently and replace if necessary.
- Keep body and hands away from pinhole leaks or nozzles that eject high pressure hydraulic fluid.
- Use cardboard or paper, not your hands, to find hydraulic leaks.
- Safely relieve all pressure in the hydraulic system, by placing the motion control levers in neutral and shutting off the engine, before performing any work on the hydraulic system.

WARNING

POTENTIAL HAZARD

- Fuel system components are under high pressure.

WHAT CAN HAPPEN

- The use of improper components can result in system failure, fuel leakage and possible explosion.

HOW TO AVOID THE HAZARD

- Use only approved fuel lines and clamps for high pressure systems.

1.6 SAFETY SIGNS

1.6.1 Keep all safety signs legible. Remove all grease, dirt and debris from safety signs and instructional labels.

1.6.2 Safety signs must be replaced if they are missing or illegible.

1.6.3 When new components are installed, be sure that current safety signs are affixed to the replaced components.

1.6.4 New safety signs may be obtained from Exmark Mfg. Co. Inc.

1.6.5 Safety signs may be affixed by peeling off the backing to expose the adhesive surface. Apply only to a clean, dry surface. Smooth to remove any air bubbles.

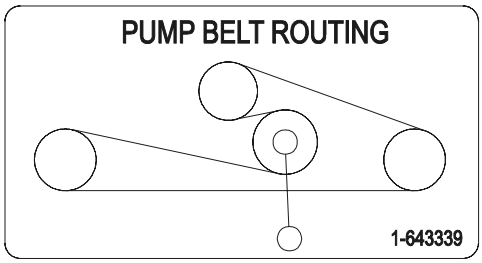
1.6.6 Familiarize yourself with the following safety signs and instruction labels. They are critical to the safe operation of your Exmark commercial mower.

PART NO. 1-513746
LOCATION: Outside of rear muffler guard

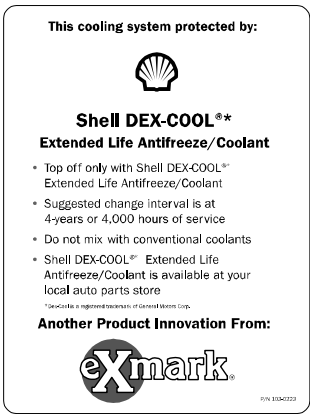
WARNING
1-513747
BATTERY CONTAINS SULFURIC ACID, AVOID CONTACT AND ALWAYS SHIELD EYES, FACE, SKIN AND CLOTHING FROM BATTERY. CIGARETTES, FLAMES OR SPARKS COULD CAUSE BATTERY TO EXPLODE. DO NOT CHARGE OR USE BOOSTER CABLES OR ADJUST POST CONNECTIONS WITHOUT PROPER TRAINING. IN EVENT OF AN ACCIDENT FLUSH WITH WATER AND CALL A PHYSICIAN IMMEDIATELY. KEEP OUT OF REACH OF CHILDREN.

PART NO. 1-513747
LOCATION: LH Side of Battery Holder

PART NO. 1-523552
LOCATION: Top Surface of Hydraulic Tank

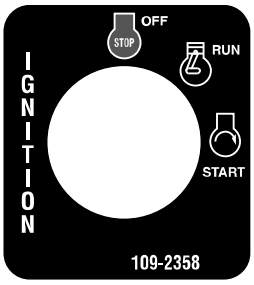


PART NO. 1-643339
LOCATION: On top of Radiator


This cooling system protected by:
Shell DEX-COOL®*
Extended Life Antifreeze/Coolant
• Top off only with Shell DEX-COOL® Extended Life Antifreeze/Coolant
• Suggested change interval is at 4-years or 4,000 hours of service
• Do not mix with conventional coolants
• Shell DEX-COOL® Extended Life Antifreeze/Coolant is available at your local auto parts store
Another Product Innovation From:
eXmark

PART NO. 103-0233
LOCATION: On Front of the Fan Shroud

PART NO. 103-1636
LOCATION: On Top of Fuel Tank



PART NO. 109-2358
LOCATION: On Control Panel

PART NO. 109-2356
LOCATION: Top of Console, RH Side

WARNING
ROTATING MECHANICAL DEVICES CAN CAUSE SERIOUS INJURY!
• DO NOT operate without guards in place
• Stop engine before opening cover
103-5881

PART NO. 103-5881
LOCATION: On top of Radiator

PART NO. 103-7218
LOCATION: On Seat Support Plate

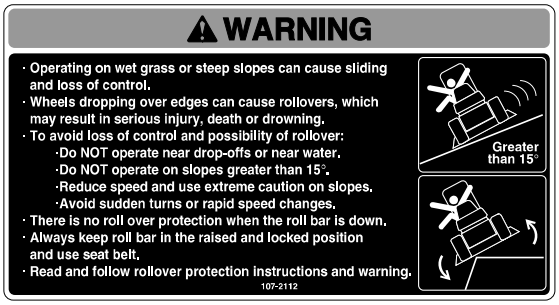
PART NO. 98-5954
LOCATION: Top of Radiator

PART NO. 93-4361
LOCATION: On LH and RH Side, Near Back of Unit

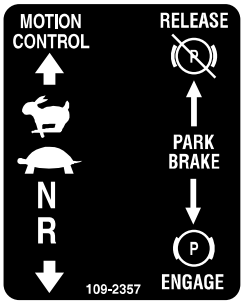
PART NO. 103-2076
LOCATION: On Top of Radiator

WARNING
TO AVOID INJURY OR DEATH FROM ROLLOVER:
Keep roll bar in the raised and locked position and use seat belt.
THERE IS NO ROLL OVER PROTECTION WHEN THE ROLL BAR IS DOWN.
Lower the roll bar only when absolutely necessary.
Do not wear seat belt when the roll bar is down.
Drive slowly and carefully.
Raise the roll bar as soon as clearance permits.
Read and follow slope operation instructions and warnings.
107-2102

PART NO. 107-2112
LOCATION: Top of Floor Pan


WARNING
· Operating on wet grass or steep slopes can cause sliding and loss of control.
· Wheels dropping over edges can cause rollovers, which may result in serious injury, death or drowning.
· To avoid loss of control and possibility of rollover:
·Do NOT operate near drop-offs or near water.
·Do NOT operate on slopes greater than 15°.
·Reduce speed and use extreme caution on slopes.
·Avoid sudden turns or rapid speed changes.
· There is no roll over protection when the roll bar is down.
· Always keep roll bar in the raised and locked position and use seat belt.
· Read and follow rollover protection instructions and warning.
107-2112
Greater than 15°

PART NO. 109-2357
LOCATION: Top of Console, LH Side



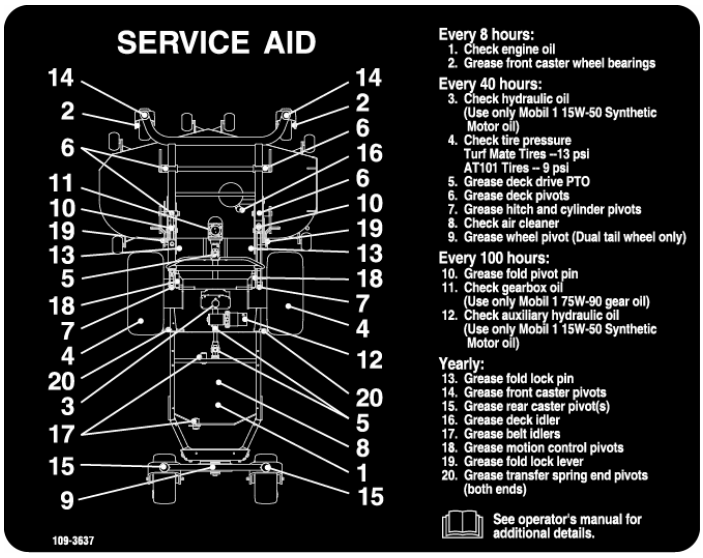
PART NO. 109-2377
LOCATION: On Hydraulic Cylinder

WARNING
HIGH PRESSURE OIL
Can cause serious injury or death.
• Do NOT go near leaks.
• Relieve hydraulic pressure before loosening fittings.
• Read operator's manual for complete procedure.
109-2377

PART NO. 109-2396
LOCATION: Top of Seat Support Plate

PART NO. 107-2102
LOCATION: Inside Surface of Upper Roll Bar

PART NO. 109-2355
LOCATION: Outside of each Weight Transfer Bell Crank


SERVICE AID
Every 8 hours:
1. Check engine oil
2. Grease front caster wheel bearings
Every 40 hours:
3. Check hydraulic oil (Use only Mobil 1 15W-50 Synthetic Motor oil)
4. Check tire pressure Turf Mate Tires --13 psi AT101 Tires -- 9 psi
5. Grease deck drive PTO
6. Grease deck pivots
7. Grease hitch and cylinder pivots
8. Check air cleaner
9. Grease wheel pivot (Dual tail wheel only)
Every 100 hours:
10. Grease fold pivot pin
11. Check gearbox oil (Use only Mobil 1 75W-90 gear oil)
12. Check auxiliary hydraulic oil (Use only Mobil 1 15W-50 Synthetic Motor oil)
Yearly:
13. Grease fold lock pin
14. Grease front caster pivots
15. Grease rear caster pivot(s)
16. Grease deck idler
17. Grease belt idlers
18. Grease motion control pivots
19. Grease fold lock lever
20. Grease transfer spring end pivots (both ends)
See operator's manual for additional details.
109-3637

PART NO. 109-3637
LOCATION: Back of Seat

PART NO. 109-2698
LOCATION: On Control Panel

• Do NOT operate under the influence of alcohol or drugs.
• Do NOT operate without shields, guards, and safety devices in place and working.
• Check the function of the operator presence controls (OPC) safety system daily. Do NOT defeat the OPC system.
• Stop engine and remove key before adjusting, servicing or cleaning machine and attachments.
• Do NOT carry passengers.
WARNING
To avoid serious injury or death:
• Read and understand the operator's manual before using this machine.
• Do NOT operate unless trained to safely use this machine.
• Look behind and to the side before changing directions.
• Hearing protection is recommended.
• Before leaving the operator's position:
- Disengage PTO.
- Move drive levers out to neutral lock position.
- Engage park brake.
- Stop engine.
109-2360

PART NO. 109-2360
LOCATION: Front of Console

2. SPECIFICATIONS

2.1 MODEL NUMBER: FR25KD

2.2 ENGINE

2.2.1 Engine Specifications: See your Engine Owner's Manual

2.2.2 RPM: Full Speed: 3870 RPM (No Load) +50/-100 RPM
Idle: 1400 RPM (No Load) ±50 RPM

2.3 FUEL SYSTEM

2.3.1 Capacity: 8.5 gal (32 L)

2.3.2 Type of Fuel: Diesel fuel, 40 cetane or higher.

2.3.3 Fuel Filter: 2 In-line 15 Micron **Kubota** P/N 12581-43012, before and after the electric fuel pump.

2.4 ELECTRICAL SYSTEM

2.4.1 Charging System: External Alternator

2.4.2 Charging Capacity: 60 amps

2.4.3 Battery Type: BCI Group 26

2.4.4 Battery Voltage: 12 Volt

2.4.5 Polarity: Negative Ground

2.4.6 Safety Interlock System:

PTO must be ***disengaged***, ***brake engaged***, and ***speed control lever in neutral position to start engine***. (It is not necessary for the operator to be in the seat to start the engine.)

Operator must be in seat ***when PTO is engaged***, ***brake is disengaged***, or ***speed control lever is moved out of neutral*** or engine will stop.

Engine will stop if the motion control levers are ***moved from neutral position while brake is engaged***.

2.5 COOLING SYSTEM

2.5.1 Fan: Belt driven with continuous operation with engine running.

2.5.2 Coolant Liquid: 50/50 mix of DexCool© extended life antifreeze and water.

2.5.3 Coolant Capacity: 4 quarts

2.6 OPERATOR CONTROLS

2.6.1 Steering and Motion Control:

Separate levers, on each side of the console, control speed and direction of travel of the respective drive wheels.

Steering is controlled by varying the position of the levers relative to each other.

Moving motion control levers outward (in slots) locks the drive system in neutral.

NOTE: Motion control levers are adjustable to three (3) heights.

2.6.2 PTO Engagement Switch: Engages drive to PTO (mower deck).

2.6.3 Parking Brake Lever: Pull back to engage parking brake.

2.7 SEAT

2.7.1 Type: Standard seat with high back, foam padded (internal suspension).

2.7.2 Mounting: Hinged to tilt up for access to hydraulic pumps, battery and other components. The seat is held in the tilted position with a linkage. Adjustable fore and aft seat track.

2.7.3 Seat Safety Switch: Internal to the bottom seat cushion, non serviceable. Time delay module incorporated into the Safety Interlock System eliminates rough ground cut-outs.

2.7.4 Armrests: Standard seat: foam padded flip-up armrests.
Optional suspension seat: molded adjustable flip-up armrests.

2.8 HYDROSTATIC GROUND DRIVE SYSTEM

2.8.1 Hydrostatic Pumps: Two Hydro Gear PR 16 cc variable displacement piston pumps.

2.8.2 Wheel Motors: Hydro Gear planetary reduction motors.

2.8.3 Hydraulic Oil Type: Use Mobil 1 15W-50 Synthetic Motor Oil.

2.8.4 Hydraulic Oil Capacity: 5.2 qt. (4.9 L.)

2.8.5 Hydraulic Filter: Replaceable cartridge type.
P/N 103-2146: 25 microns, No bypass

2.8.6 Speeds: 0-10.5 mph (16.9 km/hr) forward
0-6.6mph (10.6 km/hr) reverse

2.8.7 Drive wheel release valves allow machine to be moved when engine is not running.

2.9 TIRES

	Drive		**Front Caster**	**Rear Caster (Dual Tail Wheel)**
	Pneumatic (Air-Filled)	Pneumatic (Air-Filled)	Semi-Pneumatic	Semi-Pneumatic
Quantity	2	2	2	2
Tread	AT101	Turfmate	Smooth	Smooth
Size	24 x 12.00-12	23 x 10.50-10	9 x 3.50-4	13 x 6.5-6
Ply Rating	4	4		
Pressure	9 psi (62 kPa)	13 psi (90 kPa)		

2.10 MOWER DECK (Sold Separately)

2.10.1 Models

	FR524	**FR604**
Discharge	Side Discharge	Side Discharge
Cutting Width	52 in. (132 cm)	60 in. (152 cm)

2.11 DIMENSIONS

2.11.1 Overall Width:

	w/52" Deck	***w/60" Deck***
without deck	49.0 in. (124.5 cm)	49.0 in. (124 cm)
deflector up	53.3 in. (135.4 cm)	61.4 in. (156 cm)
deflector down	64.0 in. (163 cm)	72.0 in. (183 cm)

2.11.2 Overall Length:

without deck & floor pan folded	82.3 in. (209.0 cm)
w/52" Deck	114.3 in. (290.3 cm)
w/60" Deck	114.3 in. (290.3 cm)

2.11.3 Overall Height:

Roll Bar - Up	***Roll Bar - Down***
69.2 in. (175.8 cm)	50.7 in. (128.8 cm)

2.11.4 Curb Weight:

without Deck	1163 lbs. (528 kg)
w/52" Deck	1555 lbs. (705 kg)
w/60" Deck	1600 lbs. (726 kg)

2.11.5 Tread Width (Center to Center of Drive Wheels): 41.4 in. (105.2 cm)

2.11.6 Wheel Base (Center of Drive Wheel to Center of Rear Caster Wheel): 51.2 in. (130.0 cm)

2.11.7 Minimum Turning Radius: 55.25"

2.12 TORQUE REQUIREMENTS

Bolt Location	Torque
Wheel Lug Nuts	90-95 ft-lbs. (122-129 N-m)
Wheel Motor Mounting Bolts	72-77 ft-lbs. (98-104 N-m)
Rollover Protection System (Roll Bar) Mounting Bolts	30-35 ft-lbs. (41-47 N-m)
Clutch Retaining Bolt (secured with threadlocker)	55-60 ft-lbs. (75-81 N-m)

3. OPERATION INSTRUCTIONS

3.1 CONTROLS

3.1.1 Familiarize yourself with all controls before operating the mower.

3.1.2 Motion Control Levers: Located on each side of the console. The left lever controls the flow of hydraulic oil from the left hydrostatic pump to the left drive wheel motor. The right lever controls the flow of hydraulic oil from the right hydrostatic pump to the right drive wheel motor.

IMPORTANT: To begin movement (forward or backward) the operator must be in the seat, the brake lever must be disengaged (pushed down) before the motion control levers can be moved in or the engine will kill.

When levers are centered in the T-slot the drive system is in the neutral position. With levers moved out in the T-slot the drive system is in the ***neutral lock*** position See Figure 2.

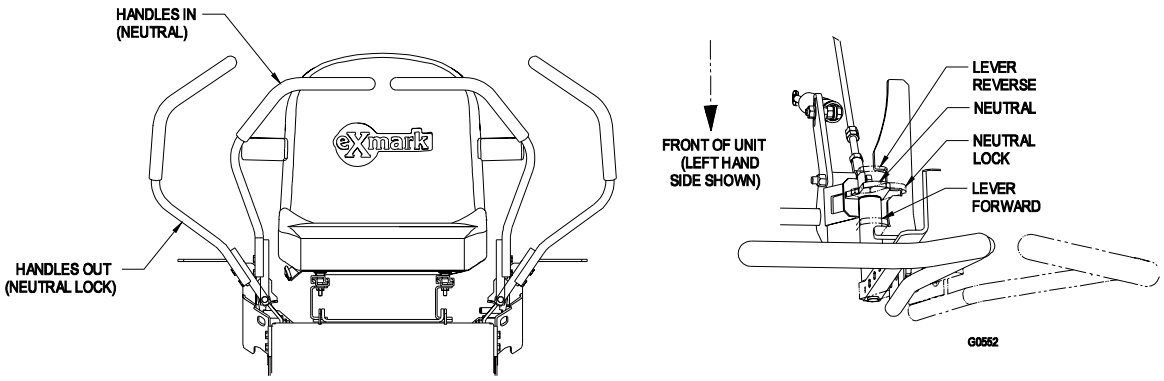


FIGURE 2

By moving both levers an ***equal*** amount forward or back from the neutral position the machine can be caused to move forward or backward in a straight line.

Movement of the ***left lever forward*** will cause the ***left drive wheel*** to rotate in a forward direction. Movement of the ***right lever forward*** will cause the ***right drive wheel*** to rotate in a forward direction. To ***stop*** forward travel, pull the levers back to the neutral position.

To ***turn left*** while moving forward, move the ***left lever*** back toward neutral to slow the left drive wheel.

To ***turn right*** while moving forward, move the ***right lever*** back toward neutral to slow the right drive wheel.

To make a ***zero turn*** to the ***left***, pull the left lever back beyond neutral while holding the right lever slightly ahead of neutral.

To make a ***zero turn*** to the ***right***, pull the right lever back beyond neutral while holding the left lever slightly ahead of neutral.

Pulling the ***levers back*** from the neutral position will cause the respective drive wheels to rotate in a ***reverse*** direction (spring tension can be felt when moving into reverse from neutral).

To turn to the left while backing, move the left lever forward toward neutral. To turn to the right while backing, move the right lever forward toward neutral.

CAUTION
POTENTIAL HAZARD ♦ Machine can spin very rapidly by positioning one lever too much ahead of the other.
WHAT CAN HAPPEN ♦ Operator may lose control of the machine, which may cause damage to the machine or injury.
HOW TO AVOID THE HAZARD ♦ Use caution when making turns. ♦ Slow the machine down before making sharp turns.

3.1.3 PTO Engagement Switch: Located on the right fuel tank console.

Switch must be ***pulled out*** to the **"ROTATE"** position to engage the PTO. The Switch is ***pushed in*** to the **"STOP"** position to stop the PTO.

3.1.4 Throttle Control: Located on right fuel tank console.

Throttle is used to control engine speed. Moving throttle lever ***forward*** will increase engine speed and moving throttle lever ***to the rear*** will decrease engine speed.

3.1.5 Brake Lever: Located on left side of unit, between the seat and the dummy tank. The brake lever engages a parking brake on the drive wheels.

Pull the lever **up** to ***engage*** the brake.

Push the lever ***down*** to ***disengage*** the brake.

The unit must be tied down and brake engaged when transporting.

3.1.6 Ignition Switch: Located on the right fuel tank console.

The ignition switch is used to start and stop the engine. The switch has three positions "OFF", "ON" and "START". Insert key into switch and rotate clockwise to the "ON" position. Rotate clockwise to the next position to engage the starter (key must be held against spring pressure in this position).

Brake must be engaged, motion control levers out (neutral lock position) and PTO switch "OFF" to start engine. (It is not necessary for the operator to be in the seat to start the engine.)

NOTE: A glow plug light, located to the rear of the glow plug switch, will illuminate when the switch is depressed. The glow plug light indicates the glow plugs are preheating the combustion chamber. Hold glow plugs on according to chart:

GLOW PLUG CHART

Ambient Temperature	Hold Glow Plugs On
Above 50°F (10°C)	NO NEED
50°F (10°C) to 23°F (-5°C)	Approx. 5 seconds
Below 23°F (-5°C)	Approx. 10 seconds
Limit of continuous use	20 seconds

3.1.7 Hour Meter: Located on the right fuel tank console. The hour meter runs when the alternator is charging and it records the number of hours that the engine has run. If the ignition switch is left on without engine running, hour meter will not run.

3.1.8 Hydraulic Lift Switch: Located on the right fuel tank console. The hydraulic lift switch is used to raise and lower the mower deck.

Push the ***front*** portion of the hydraulic lift switch down to ***raise*** the mower deck to the desired height.

Push the ***rear*** portion of the hydraulic lift switch down to ***lower*** the mower deck to the desired height.

3.1.9 Fuel Gauge: Located at the rear of the right fuel tank.

The fuel gauge monitors the amount of fuel left in the right fuel tank only. The left tank does not hold fuel.

3.1.10 Coolant Temperature Gauge: Located on the right fuel tank console.

The coolant temperature gauge monitors the temperature of the engine coolant. An engine overheating condition is indicated by the red area on the gauge.

3.1.11 Coolant Temperature Light: Located on the right fuel tank console. The light will come on if the engine is overheating and an alarm will sound (See Section 3.1.13).

3.1.12 Glow Plug Light: Located on the right fuel tank console. The glow plug light comes on when the glow plugs are preheating the combustion chamber. This happens when the glow switch is depressed and while the engine is cranking.

3.1.13 Warning Buzzer: Located behind the seat under the engine cover on the right hand side of the engine fan shroud. The buzzer is a warning signal for the following circumstances:

a) When the engine is running and the buzzer emits a continuous beep, the buzzer is warning the user that the engine is overheating. Perform the following steps.

1. Disengage the mower blades, and idle down the engine.
2. Look at the temperature gauge to determine if temperature continues to increase. If it does, turn the unit off and allow the engine and engine components to cool.
3. Check the coolant level. If necessary fill with coolant as described in Section 4.1.2.
4. Remove any debris on or around the radiator that may restrict airflow.
5. Check to see if the water pump/alternator belt is intact. If belt is missing, do not run unit, as unit can overheat and damage the engine. See Engine Service Dealer.

b) When the engine is running and the buzzer emits intermittent beeps, the buzzer is warning the user that the engine oil pressure is low. Perform the following steps.

1. Turn the unit off, allow the engine and engine components to cool.
2. Check the oil level and fill, if necessary, as described in Section 4.1.1.
3. Check for oil leaking from engine. If the engine is leaking, see Engine Service Dealer.

3.1.14 Alternator Charging Light: Located to the rear of the key switch. Light will come on when the alternator is not charging.

3.1.15 Low Oil Pressure Light: Located to the rear of the key switch with the alternator light. Light will come on when engine oil pressure is low or lost.

NOTE: This switch is not a low oil level sensor and will not alert the operator if the engine oil level is low.

3.1.16 Drive Wheel Release Valves: Located on the top left front corner of hydrostatic pumps. Drive wheel release valves are used to release the hydrostatic drive system to allow the machine to be pushed without the engine running.

With a wrench, turn both valves one turn counter-clockwise to release drive system. Turn clockwise to reset system. ***DO NOT overtighten. DO NOT tow machine.***

Use a 5/8 wrench to turn the valves.

3.2 PRE-START

3.2.1 Fill fuel tank. For best results use only clean, fresh diesel fuel, with a cetane rating of 40 higher.

NOTE: Do not use kerosene or gasoline instead of diesel fuel. Failure to observe this caution will damage the engine.

DO NOT add oil to fuel.

DO NOT overfill fuel tank. Never fill the fuel tank so that the fuel level rises above a level that is 1/2" below the bottom of the filler neck to allow for fuel expansion and prevent fuel spillage.

3.2.2 Make sure you understand the controls, their locations, their functions, and their safety requirements.

3.2.3 Refer to Maintenance, Section 4, and perform all the necessary inspection and maintenance steps.

3.3 OPERATING INSTRUCTIONS

3.3.1 Raise roll bar:

Operate the unit with the roll bar in the raised and locked position and use seat belt. There is no rollover protection when the roll bar is down. If it is necessary to lower the roll bar, do not wear the seat belt. Raise the roll bar as soon as clearance permits.

3.3.2 Starting Engine:

a) ***Brake must be engaged, motion control levers out (neutral lock position) and PTO switch "OFF" to start engine.*** (It is not necessary for the operator to be in the seat to start the engine.)

b) On a ***warm*** engine, place the ***throttle*** in the "SLOW" position.

On a ***cold*** engine (below 14° F (-10° C)), place the ***throttle*** in the "MIDWAY" position.

Note: Do not use fuel left over from summer.

c) Turn the ignition switch to the “ON” position. Depress the glow plug switch and the glow plug light will turn on. Hold switch according to chart in section 3.1.6. Turn the ignition switch to the “START” position. Release the ignition switch as soon as the engine starts.

IMPORTANT: ***DO NOT*** **crank the engine continuously for more then ten (10) seconds at a time. If the engine does not start, allow a 30 second cool-down period between starting attempts. Failure to follow these guidelines can burn out the starter motor and/or fuel solenoid.**

d) Move the throttle to the “SLOW” (if in “MIDWAY”) and let the engine warm up a few minutes before moving the throttle to the “FAST” position.

3.3.3 Engaging PTO:

DANGER
POTENTIAL HAZARD ♦ The rotating blades under the mower deck are dangerous.
WHAT CAN HAPPEN ♦ Blade contact can cause serious injury or kill you.
HOW TO AVOID THE HAZARD ♦ *DO NOT* put hands or feet under the mower or mower deck when the blades are engaged.

DANGER
POTENTIAL HAZARD ♦ An uncovered discharge opening will allow objects to be thrown in an operator’s or bystander’s direction. Also, contact with the blade could occur.
WHAT CAN HAPPEN ♦ Thrown objects or blade contact can cause serious injury or death.
HOW TO AVOID THE HAZARD ♦ Never operate the mower with the discharge deflector raised, removed, or altered unless there is a grass collection system or mulch kit in place and working properly.

The PTO push-pull switch engages the cutting blades. Be sure that ***all*** persons are ***clear*** of the mower deck and discharge area ***before engaging*** the PTO.

IMPORTANT: Operator must be in seat before the PTO can be engaged.

Set throttle to "midway" position. Pull the switch out to the “ROTATE” position. Accelerate to full throttle to begin mowing.

3.3.4 Stopping PTO: Set throttle to the “midway” position. Push the switch in to the “STOP” position to stop the PTO.

3.3.5 Stopping Engine: Bring unit to a ***full stop***. ***Disengage*** the PTO, ***move motion control levers*** to the ***neutral*** position and ***set the parking brake***.

Before stopping the engine, move the throttle control to the “SLOW” position. Keep on running at idle for a short time, (approximately one minute) then stop the engine.

Rotate ignition switch to “OFF” position. Remove the key to prevent children or other unauthorized persons from starting engine.

3.4 TRANSPORTING

IMPORTANT: Do not transport FrontRunner tractor without an approved Exmark front mount attachment.

3.4.1 Transporting a Unit: Use a heavy-duty trailer or truck to transport the machine. Engage the park brake and block the wheels. Securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes. Be sure that the trailer or truck has all necessary lighting and marking as required by law. Secure the trailer with a safety chain.

CAUTION
POTENTIAL HAZARD ♦ This unit does not have proper turn signals, lights, reflective markings, or a slow moving vehicle emblem. These items are required to drive on a public street or roadway.
WHAT CAN HAPPEN ♦ Driving on a street or roadway without such equipment is dangerous and can lead to accidents causing personal injury. ♦ Driving on a street or roadway without such equipment may also be a violation of State laws and the operator may be subject to traffic tickets and/or fines.
HOW TO AVOID THE HAZARD ♦ Do not drive a unit on a public street or roadway.

WARNING

POTENTIAL HAZARD

- Loading a unit on a trailer or truck increases the possibility of tip-over.

WHAT CAN HAPPEN

- Tip-over of the unit could cause serious injury or death.

HOW TO AVOID THE HAZARD

- Use extreme caution when operating a unit on a ramp.
- Use only a single, full width ramp; DO NOT use individual ramps for each side of the unit.
- If individual ramps must be used, use enough ramps to create an unbroken ramp surface wider than the unit.
- DO NOT exceed a 15° angle between ramp and ground or between ramp and trailer or truck.
- Avoid sudden acceleration while driving unit on a ramp.

3.4.2 Loading a Unit: Use extreme caution when loading units on trailers or trucks. One full width ramp is required. If it is not possible to use one full width ramp, use enough individual ramps to simulate a full width continuous ramp.

Ramp should be long enough so that the angles between the ramp and the ground and the ramp and the trailer or truck do not exceed 15°. A steeper angle may cause mower deck components to get caught as the unit moves from ramp to trailer or truck. Steeper angles may also cause the unit to tip. If loading on or near a slope, position the trailer or truck so it is on the down side of the slope and the ramp extends up the slope. This will minimize the ramp angle. The trailer or truck should be as level as possible.

DO NOT attempt to turn the unit while on the ramp, you may lose control and drive off the side.

Avoid sudden acceleration when driving on a ramp.

4. MAINTENANCE & ADJUSTMENTS

WARNING

POTENTIAL HAZARD

- While maintenance or adjustments are being made, someone could start the engine.

WHAT CAN HAPPEN

- Accidental starting of the engine could seriously injure you or other bystanders.

HOW TO AVOID THE HAZARD

- Remove the key from the ignition switch and engage parking brake. Disconnect the negative battery cable before you do any maintenance.

WARNING

POTENTIAL HAZARD

- The engine can become very hot.

WHAT CAN HAPPEN

- Touching a hot engine can cause severe burns.

HOW TO AVOID THE HAZARD

- Allow the engine to cool completely before service or making repairs around the engine area.

4.1 PERIODIC MAINTENANCE

4.1.1 Check engine oil level:

Service Interval: Daily

a) Stop engine and wait for all moving parts to stop. Make sure unit is on a level surface.

b) Tilt seat forward and raise hood to gain access to access to engine area.

c) Check with engine cold.

d) Clean area around dipstick. Remove dipstick and wipe oil off. Reinsert the dipstick and push it all the way down into the tube. Remove the dipstick and read the oil level.

e) If the oil level is low, wipe off the area around the oil fill cap, remove cap and fill to the "FULL" mark on the dipstick. Use oil as specified in Engine Owner's Manual. ***DO NOT*** overfill.

IMPORTANT*: DO NOT* operate the engine with the oil level below the "LOW" (or "ADD") mark on the dipstick, or over the "FULL" mark.

4.1.2 Check engine coolant level

Service Interval: Daily

a) Stop engine and wait for all moving parts to stop. Make sure machine is on a level surface.

b) Tilt seat up and tilt hood forward to gain access to the cooling area.

c) Check with engine cold.

d) View coolant level in overflow bottle on the left side of the engine. Coolant level should be at the indicator line on the overflow bottle.

e) If the coolant level is low, remove the cap to the overflow bottle and fill to the indicator line. Use coolant specified in Section 2.5.2.

NOTE: Units should only be filled with Dex-Cool© extended life coolant, which can be identified by its orange color.

WARNING

POTENTIAL HAZARD

- Engine coolant is hot and pressurized.
- Radiator and surrounding parts are hot.

WHAT CAN HAPPEN

- Spray or steam from hot, pressurized liquid in the engine cooling system or touching a hot radiator may cause severe burns.

HOW TO AVOID THE HAZARD

- Allow the engine to cool completely before removing the radiator cap or servicing any component of the cooling system.

CAUTION

POTENTIAL HAZARD

- Engine coolant is toxic.

WHAT CAN HAPPEN

- Swallowing coolant can cause poisoning.

HOW TO AVOID THE HAZARD

- Do not swallow
- Keep out of reach of children and pets.

4.1.3 Check battery charge:

Service Interval: Monthly

Allowing batteries to stand for an extended period of time without recharging them will result in reduced performance and service life. To preserve optimum battery performance and life, recharge batteries in storage when the open circuit voltage drops to 12.4 volts.

Note: To prevent damage due to freezing, battery should be fully charged before putting away for winter storage.

a) Check the voltage of the battery with a digital voltmeter. Locate the voltage reading of the battery in the table below and charge the battery for the

recommended time interval to bring the charge up to a full charge of 12.6 volts or greater.

IMPORTANT: Make sure the negative battery cables are disconnected and the battery charger used for charging the battery has an output of 16 volts and 7 amps or less to avoid damaging the battery (see chart below for recommended charger settings).

Voltage Reading	Percent Charge	Maximum Charger Settings	Charging Interval
12.6 or greater	100%	16 volts/7 amps	No Charging Required
12.4 – 12.6	75 – 100%	16 volts/7 amps	30 Minutes
12.2 – 12.4	50 – 75%	16 volts/7 amps	1 Hour
12.0 – 12.2	25 – 50%	14.4 volts/4 amps	2 Hours
11.7 – 12.0	0 – 25%	14.4 volts/4 amps	3 Hours
11.7 or less	0%	14.4 volts/2 amps	6 Hours or More

4.1.4 Clean engine cooling system:

Service Interval: Daily or more often in dry conditions

a) Wipe debris from radiator screen in front of radiator. Rotate engine cover forward, pull out radiator screen, and wipe debris from radiator core as required.

4.1.5 Check safety interlock system.

Service Interval: Daily

a) ***Check starting circuit***:

Starter ***should*** crank with, parking brake ***engaged,*** PTO ***disengaged*** and motion control levers moved out in the ***neutral lock*** position. The operator does not need to be in the seat to start the engine.

Try to start with ***operator in seat***, parking brake ***disengaged,*** PTO ***disengaged*** and motion control levers in the ***neutral lock*** position - starter ***must not crank***.

Try to start with ***operator in seat***, parking brake ***engaged,*** PTO ***engaged*** and motion control levers in the ***neutral lock*** position - starter ***must not crank***.

Try to start with ***operator in seat***, parking brake ***engaged,*** PTO ***disengaged, and the left motion control lever in,*** starter ***must not crank,*** repeat again with the ***right lever in***, then with ***both levers in*** - starter ***must not crank.***

b) ***Check the kill circuits***:

Run engine at one-third throttle, ***disengage*** parking brake and ***raise off*** of seat (but do not get off of machine) engine ***must stop*** after approx. 1/2 second has elapsed (seat has time delay kill switch to prevent cut-outs on rough terrain).

Run engine at one-third throttle, ***engage PTO*** and ***raise off*** of seat (but do not get off of machine) engine ***must stop*** after 1/2 second has elapsed.

Run engine at one-third throttle, with brake disengaged, move levers in and rise off seat (but do not get off of machine) engine ***must stop*** after 1/2 second has elapsed.

Again, run engine at one-third throttle, brake ***engaged,*** and move ***left motion control lever in*** - engine ***must stop.***

Repeat again moving the ***right lever in***, then moving ***both levers in*** - engine ***must stop*** whether operator is ***on seat or not***.

c) ***Check the PTO circuit:***

See the FR524 and FR604 Operator's manual to become familiar with the deck operation. Open the folding deck latches, ***disengage*** the park brake, move the motion control levers in to ***neutral***, and ***disengage*** the PTO. ***Lower*** the deck until the PTO switch arm is no longer depressing the PTO "kill" switch. See Figure 3.

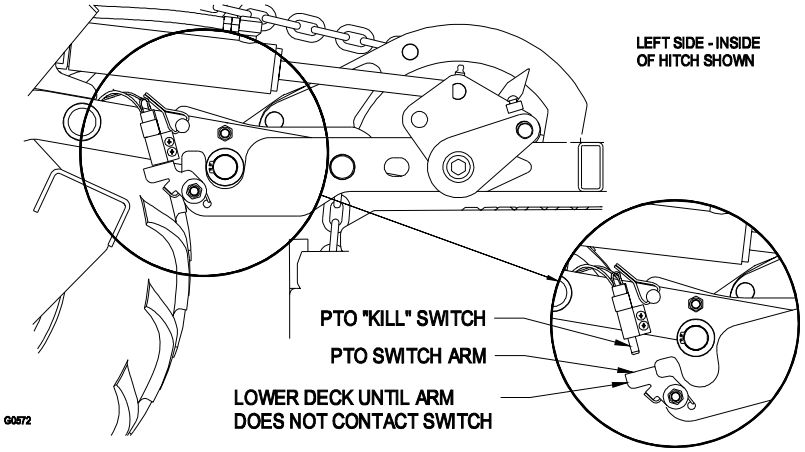


FIGURE 3

Run the engine at half throttle and ***pull*** up on the PTO engagement switch.

The ***PTO must not engage***.

NOTE: If machine *does not* pass any of these tests, do not operate. Contact your authorized EXMARK SERVICE DEALER.

IMPORTANT: It is essential that operator safety mechanisms be connected and in proper operating condition prior to use for mowing.

4.1.6 Check for loose hardware.

Service Interval: Daily

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Visually inspect machine for any loose hardware or any other possible problem. Tighten hardware or correct the problem before operating.

4.1.7 Check rollover protections system (roll bar) pins

Service Interval: Daily

a) Make sure latch pin and hair pin are fully installed and lanyard is in good condition.

b) Check seat belt for cuts or wear. Replace if necessary.

4.1.8 Service air cleaner.

First Service Interval: 50 hrs.
Normal Interval: 100 hrs
Replacement Interval: 600 hrs
(More often under severe conditions.)
See Engine manual for additional information.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward and raise hood to gain access to the air cleaner.

c) Loosen retaining clips and remove air cleaner compartment cover.

d) Remove outer paper element. Check the condition of the paper element. Replace if dirty, bent or damaged.

e) Check the condition of the *inner element.* Replace whenever it appears dirty, typically every other time the paper element is replaced. Clean the base around the inner element before removing, so dirt does not get into the engine.

f) ***DO NOT*** wash or use pressurized air to clean paper element or inner element.

g) Reinstall elements. Position the cover so that the rubber dust ejector is pointing downward and secure with retaining clips.

4.1.9 Change engine oil:

Service Intervals:
First service interval – 50 hrs.
Normal service interval – 100 hrs.
(yearly if operated less than 100 hrs.)
(more often under heavy load or high temperatures).

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat up and tilt hood forward to gain access to the engine area.

c) Drain oil while engine is warm from operation.

d) Remove the oil drain plug. Allow oil to drain then replace the drain plug.

e) Replace the oil filter ***every other*** oil change.

f) Clean around oil filter and unscrew filter to remove.

g) Before reinstalling a new filter, apply a thin coating of fresh clean oil on the surface of the gasket.

h) Turn filter clockwise until rubber seal contacts the filter adapter, then tighten filter an additional 1 full turn.

i) Clean around oil fill cap and remove cap. Fill to specified capacity and replace cap. Use oil recommended in engine owner's manual. ***DO NOT*** overfill.

j) Start the engine at idle for 5 minutes. Stop engine and wait three minutes, then check the oil level. If required, add oil to bring level to the "FULL" mark on the dipstick. ***DO NOT*** overfill.

k) Check for leaks, including around the oil filter.

4.1.10 Change engine coolant:

Service Interval: 4 years/4000 hours* - Dex-Cool© extended life coolant (orange color)

******* *It is recommended to service at whichever interval happens first.*

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake. Machine must be positioned on level surface.

b) Tilt seat up and tilt hood forward to gain access to the cooling area.

Drain coolant when engine is cool. Coolant may be drained from the radiator by loosening the drain cock in the left rear corner. The engine block may be drained by removing the lower radiator hose and/or by opening the drain cock from the engine block. The engine drain cock may be accessed on the right side of the unit and is located as shown in Figure 4.

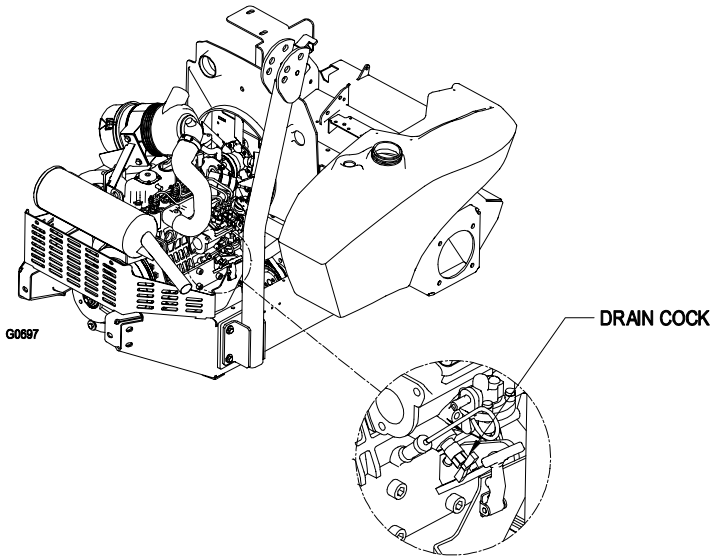


FIGURE 4

c) Tighten engine and radiator drain cocks. Reinstall lower hose (if removed).

d) Fill radiator with a 50/50 mix of water and Dex-Cool © coolant, allowing some room (approximately 1/2" (1.27 cm)) for expansion. Add 50/50 coolant mix to overflow bottle on the left side of the engine as required to bring the level up to the indicator line on the bottle.

WARNING
POTENTIAL HAZARD ♦ Engine compartment contains open belt drives and fans. ♦ Rotating components can cause injury
WHAT CAN HAPPEN ♦ Fingers, hands, loose clothing or jewelry can get caught by the rotating fan and drive shaft.
HOW TO AVOID THE HAZARD ♦ Do not operate machine without the covers in place. ♦ Keep fingers, hands, and clothing clear of rotating components. ♦ Shut off engine, wait for all moving parts to stop, and engage parking brake. Remove the ignition key before performing maintenance.

e) With the cap off the radiator, start the engine. Refer to Section 3.3.2.

f) Operate engine until the engine thermostat opens and coolant is circulating through the radiator core. As air is purged from the engine block and the coolant level drops, add additional coolant to the radiator.

g) When the radiator is completely full and no additional coolant can be added, continue running the engine and install the radiator cap. Make sure that the

cap is completely seated by pressing down firmly while turning until the cap stops. Once the cap is installed, the engine may be stopped.

4.1.11 Check hydraulic oil level:

Service Interval: 40 hr.

a) Stop engine and wait for all moving parts to stop.

b) Tilt seat up.

c) Clean area around hydraulic reservoir cap and remove cap. Oil level should be to the top of the baffle inside the tank. If not, add oil. **Use only Mobil 1 15W-50 synthetic motor oil.** Replace hydraulic reservoir cap and tighten until snug. ***Do not overtighten.***

NOTE: The baffle is labeled “HOT” and “COLD”. The oil level varies with the temperature of the oil. The “HOT” level shows the level of oil when it is at 225°F (107°C). The “COLD” level shows the level of the oil when it is at 75°F (24°C). Fill to the appropriate level depending upon the temperature of the oil. For example: If the oil is about 150° F (65°C), fill to halfway between the “HOT” and “COLD” levels. If the oil is at room temperature (about 75° F (24°C)), fill only to the “COLD” level.

4.1.12 Check auxiliary hydraulic oil level:

Service Interval: If there is evidence of a leak or the hydraulic cylinder does not perform normally.

a) Retract the hydraulic cylinder.

b) Stop engine and wait for all moving parts to stop.

c) Tilt the seat forward.

d) Locate the auxiliary hydraulic power unit reservoir. See Figure 5.

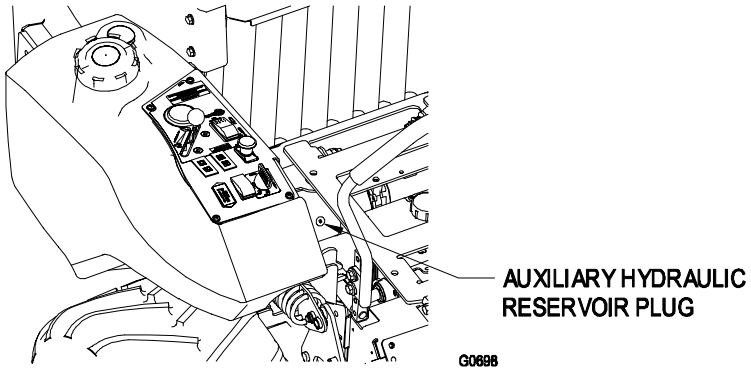


FIGURE 5

e) Clean area around the reservoir plug and remove. Oil level should be up to the reservoir plug hole. If not, add oil. ***Use only Mobil 1 15W-50 synthetic motor oil.*** Replace reservoir plug and tighten until snug. ***Do not overtighten.***

4.1.13 Check tire pressures:.

Service Interval: 40 hrs.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Check tire pressure in drive tires.

c) AT101 (Bar Lug) drive tires should be inflated to 9 psi (62 kpa).

d) Turfmate drive tires should be inflated to 13 psi (90 kpa).

e) The rear caster tires are semi-pneumatic and do not need to be inflated.

NOTE: Do not add any type of tire liner or foam fill material to the tires. Excessive loads created by foam filled tires may cause failures to the hydro drive system, frame, and other components. Foam filling tires will void the warranty.

4.1.14 Check condition of belts:

Service Interval: 40 hrs.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Check pump and PTO drive belts and check alternator belt.

c) Pump and PTO drive belts are spring tensioned and no adjustment is necessary. See section 4.2.2 and 4.2.3 for belt replacement.

4.1.15 Lubricate grease fittings:

Service Interval: Refer to chart.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Lubricate fittings with one to two pumps of NGLI grade #2 multi-purpose gun grease.

Refer to the following chart for fitting locations and lubrication schedule.

LUBRICATION CHART

Fitting Locations	Initial Pumps	No. of Places	Service Interval
1. Hitch and Cylinder Pivots	2	4	40 hrs
2. Fold Pivot Pin	2	2	100 hrs
3. Fold Lock Pin	2	2	yearly
4. Rear Caster Pivot	*0	1	*yearly
5. Belt Idlers	1	2	yearly
6. Motion Control Pivots	1	2	yearly
7. Transfer Spring Ends	1	4	yearly
8. Dual Tail Wheel Pivot	2	1	40 hrs

* See Section 4.1.15 c) for special lubrication instructions on the rear caster pivots and Section 4.1.16 for special lubrication instructions on the rear caster wheel hubs.

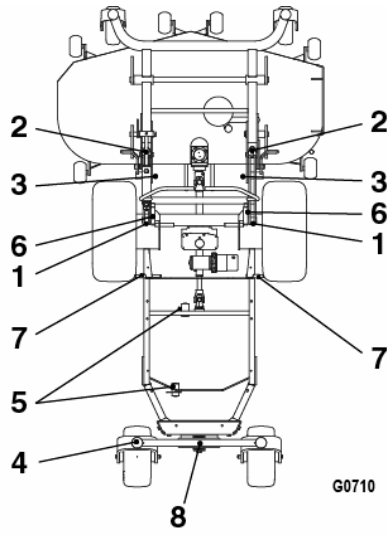


FIGURE 6

c) Lubricate caster pivots once a year. Remove hex plug and cap. Thread grease zerk in hole and pump with grease until it oozes out around top bearing. Remove grease zerk and thread plug back in. Place cap back on.

4.1.16 Lubricate rear caster wheel hubs:

Service Interval: Once Yearly

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Remove caster wheel from caster forks.

c) Remove seal guards from the wheel hub.

d) Remove one of the spacer nuts from the axle assembly in the caster wheel. Note that thread locking adhesive has been applied to lock the spacer nuts to the axle. Remove the axle (with the other

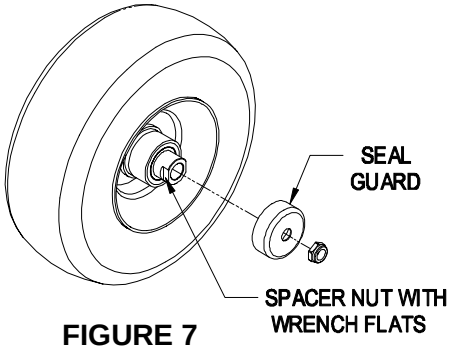


FIGURE 7

spacer nut still assembled to it) from the wheel assembly.

e) Pry out seals, and inspect bearings for wear or damage and replace if necessary.

f) Pack the bearings with a NGLI grade #1 multi-purpose grease.

g) Insert (1) bearing, (1) new seal into the wheel.

NOTE: Seals (Exmark PN 103-0063) must be replaced.

h) If the axle assembly has had both spacer nuts removed (or broken loose), apply a thread locking adhesive to (1) spacer nut and thread onto the axle with the wrench flats facing outward. Do not thread spacer nut all of the way onto the end of the axle. Leave approximately 1/8" (3 mm) from the outer surface of the spacer nut to the end of the axle inside the nut.

i) Insert the assembled nut and axle into the wheel on the side of the wheel with the new seal and bearing.

j) With the open end of the wheel facing up, fill the area inside the wheel around the axle full of NGLI grade #1 multi-purpose grease.

k) Insert the second bearing and new seal into the wheel.

l) Apply a thread locking adhesive to the 2nd spacer nut and thread onto the axle with the wrench flats facing outward.

m) Torque the nut to 75-80 in-lbs. (8-9 N-m), loosen, then re-torque to 20-25 in-lbs. (2-3 N-m). Make sure axle does not extend beyond either nut.

n) Re-install the seal guards over the wheel hub and insert wheel into caster fork. Re-install caster bolt and tighten nut fully.

IMPORTANT: To prevent seal and bearing damage, check the bearing adjustment often. Spin the caster tire. The tire should not spin freely (more than 1 or 2 revolutions) or have any side play. If the wheel spins freely, adjust torque on spacer nut until there is a slight amount of drag. Re-apply threadlocking adhesive.

4.1.17 Lubricate the brake handle pivot:

Service Interval: 160 hrs.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward.

c) Lubricate bronze bushings on brake handle pivot with a spray type lubricant or light oil.

4.1.18 Lubricate the brake rod bushings:

Service Interval: 160 hrs.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward and raise hood.

c) Lubricate bronze bushings on each end of the brake rod shaft with a spray type lubricant or light oil (bushings are located to the inside of the flange bearings).

4.1.19 Lubricate the motion control bronze bushings:

Service Interval: 160 hrs.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward.

c) Lubricate bronze bushings on the flange bearings securing the motion control arm shafts with a light oil or a spray type lubricant.

4.1.20 Lubricate the motion control shaft:

Service Interval: Yearly.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward.

c) Remove tab at rear of motion control shaft.

d) Pull motion control shaft out and lubricate with an NGLI grade #2 multi-purpose gun grease.

e) Re-install shaft and tab.

4.1.21 Lubricate steering linkage rod ends:

Service Interval: 160 hrs.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward.

c) Lubricate each end of both steering linkage rods with a spray lubricant or light oil.

4.1.22 Drain water from fuel tank:

Service Interval: 160 hrs.

a) Park on level ground. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Place a drain pan under the fuel tank and loosen the drain cock approximately 1 turn.

c) Drain out any water.

d) When fuel begins to flow from the tank, tighten the drain cock.

e) Prime the fuel system (See Section 4.1.24).

f) Start engine. Check for leaks.

IMPORTANT: Water or other contaminants in fuel can ***severely damage*** fuel pump and/or the other engine components.

g) If any water was drained, run engine for approximately 2 minutes to flush any remaining water out of the engine and fuel system.

4.1.23 Change fuel filter:

Service Interval: 400 hrs. or as required.

a) A fuel filter is installed between the fuel tank and fuel pump, and between the fuel pump and the engine. Replace when necessary.

Replacement Filters	**Kubota** P/N 12581-43012

4.1.24 Fuel priming procedure:

a) Unit is equipped with an electric priming pump. Turn key on to let electric pump run for at least 30 seconds before starting.

b) Start engine using procedure in Section 3.3.2.

IMPORTANT: DO NOT over crank engine. Over cranking engine can damage the starter and/or the fuel solenoid. If engine does not start within 10 seconds allow electric pump to run for 30 seconds before cranking again.

4.1.25 Change hydraulic system filter:

First Interval: 250 hrs.

Normal Interval: Yearly.

NOTE: Use only Exmark Part No.103-2146

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Carefully clean area around filter. It is ***important*** that ***no dirt*** or ***contamination*** enter hydraulic system.

c) Unscrew filter to remove and allow oil to drain from reservoir.

IMPORTANT: Before reinstalling new filter, fill it with Mobil 1 15W-50 and apply a thin coat of oil on the surface of the rubber seal.

Turn filter clockwise until rubber seal contacts the filter adapter, then tighten the filter an additional 2/3 to 3/4 turn.

d) Fill reservoir as stated in Section 4.1.11.

CAUTION
POTENTIAL HAZARD ♦ Raising the mower deck for service or maintenance relying solely on mechanical or hydraulic jacks could be dangerous.
WHAT CAN HAPPEN ♦ The mechanical or hydraulic jacks may not be enough support or may malfunction allowing the unit to fall, which could cause injury.
HOW TO AVOID THE HAZARD ♦ DO NOT rely solely on mechanical or hydraulic jacks for support. Use adequate jack stands or equivalent support.

e) Raise the drive wheels off of the ground and support with jack stands (or equivalent support) just high enough to allow drive wheels to turn freely.

f) Start engine and move throttle control ahead to full throttle position. Move the motion control levers to the full speed and run for several minutes. Shut down machine and recheck oil level.

Do not change hydraulic system oil (except for what can be drained when changing filter), unless it is felt the oil has been contaminated or been extremely hot.

Changing oil unnecessarily could ***damage*** hydraulic system by introducing contaminates into the system.

4.1.26 Fuel Tank – mounting hardware specification

When installing the nuts on the fuel tank studs, fully tighten the nyloc nut and back off 1/2 turn. This allows for normal fuel tank expansion and contraction with changes in temperature and fuel levels.

4.1.27 Thread locking adhesives such as “Loctite 242” or “Fel-Pro, Pro-Lock Nut Type” are used on the following fasteners:

a) Pump drive sheave set screws.

b) Line shaft sheave setscrews.

c) Square head setscrews on Hydro pump control arms.

d) Sheave retaining bolt in the end of engine crankshaft.

e) Caster wheel spacer nuts.

f) Fuel tank bulkhead fitting nuts.

g) Motion control tab retaining bolt.

4.1.28 Dielectric grease is used on blade type electrical connections to prevent corrosion and loss of contact.

4.2 ADJUSTMENTS

IMPORTANT: Disengage PTO, shut off engine, wait for all moving parts to stop, remove key, and engage parking brake before servicing, cleaning, or making any adjustments to the unit.

4.2.1 Pump Drive Belt Tension:

Spring Tensioned - No adjustment necessary.

4.2.2 Pump Drive Belt Replacement:

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Remove pump drive belt.

c) Route new belt onto sheaves as shown in the decal located on the top of the radiator. See Figure 8.

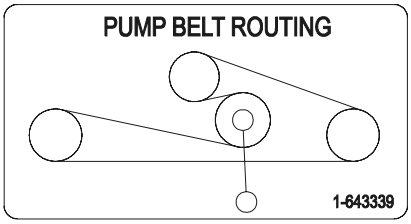


FIGURE 8

4.2.3 Alternator belt tension:

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward and raise hood.

c) To tighten alternator belt, loosen both upper and lower alternator mounting bolts. Rotate alternator out, away from engine and re-tighten hardware to secure in place.

d) When properly tensioned, the alternator belt will deflect 1/4”-3/8” (7-9 mm) while applying 22 pounds of force to the belt midway between alternator and crankshaft pulley.

4.2.4 Park Brake Adjustment:

Check to make sure each brake is adjusted properly.

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward and raise hood.

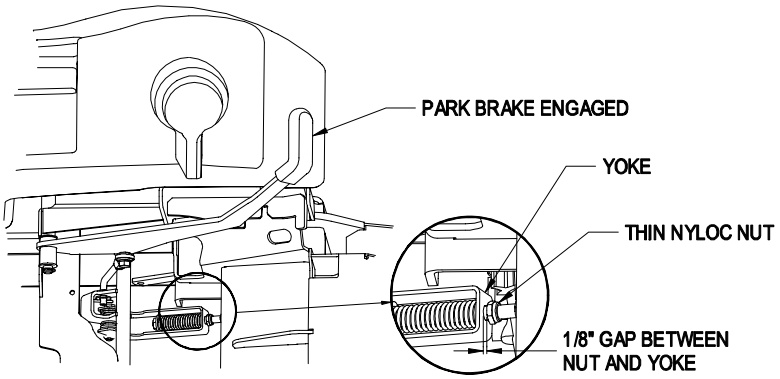


FIGURE 9

c) Disengage the park brake. Measure the length of the park brake spring. The spring should measure 2.5" (6.4cm). See Figure 10.

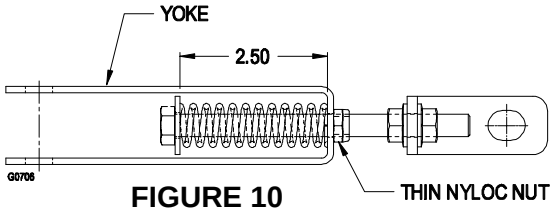


FIGURE 10

d) If necessary, turn the thin nyloc nut to obtain the 2.5" (6.4cm) spring length.
e) Engage the park brake. Measure the gap between the thin nyloc nut and the park brake clevis. The gap should measure 1/8" (3.2mm)

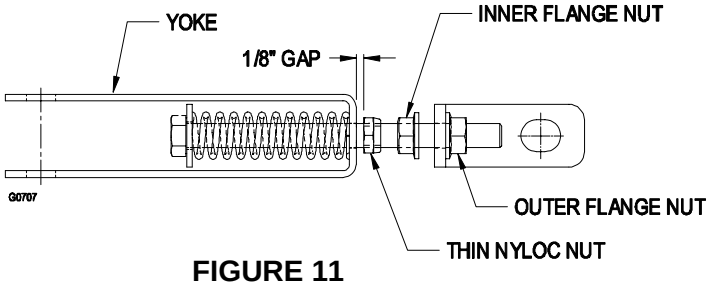


FIGURE 11

f) If necessary, loosen the inner flanged nut and turn the outer nut to obtain the 1/8" (3.2mm) gap. Re-tighten the inner flanged nut. See Figure 11
g) If park brake does not fully disengage when the lever is disengaged check the brake rod linkage assembly. The assembly should measure 7-3/8" (18.7 cm) from the center of the ball joint to the center of the lower end of the linkage rod. See Figure 8.

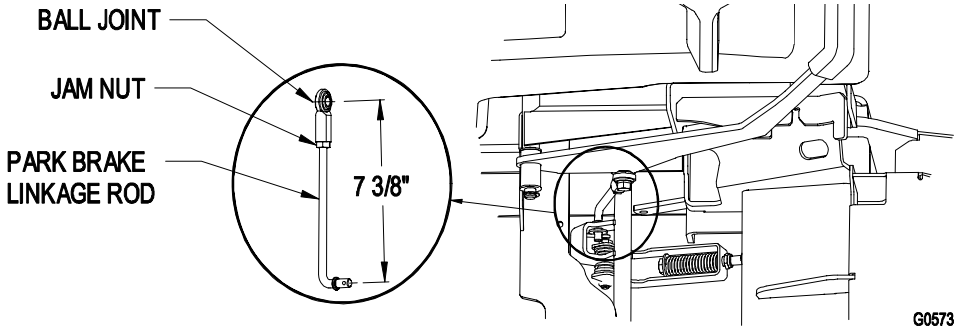


FIGURE 12

h) If the linkage does not measure 7-3/8" (18.7 cm) or still does not disengage as desired, remove the bolt that secures the ball joint to the brake lever and loosen the jam nut next to the ball joint. Rotate the ball joint in half-turns counter-clockwise until desired disengagement is obtained.
i) Repeat procedure for other side.

4.2.5 Motion control linkage adjustment:

WARNING

POTENTIAL HAZARD

- Engine must be running and drive wheels must be turning so motion control adjustment can be performed.

WHAT CAN HAPPEN

- Contact with moving parts or hot surfaces may cause personal injury.

HOW TO AVOID THE HAZARD

- Keep fingers, hands, and clothing clear of rotating components and hot surfaces.

CAUTION

POTENTIAL HAZARD

- Raising the unit for service or maintenance relying solely on mechanical or hydraulic jacks could be dangerous.

WHAT CAN HAPPEN

- The mechanical or hydraulic jacks may not be enough support or may malfunction allowing the unit to fall, which could cause injury.

HOW TO AVOID THE HAZARD

- DO NOT rely solely on mechanical or hydraulic jacks for support. Use adequate jack stands or equivalent

Set neutral:

a) Remove the electrical connection from the seat safety switch, located directly in front of the seat switch assembly.

b) The neutral adjustment must be made with the drive wheels turning. Raise the frame and place on jack stands so that drive wheels can rotate freely.

Temporarily install a jumper wire across the terminals in the connector of the wiring harness.

c) Start the engine.

d) Run the unit at least 5 minutes with the drive levers at full forward speed to bring hydraulic system oil up to operating temperature.

e) To obtain the neutral position, adjust the left and right pump control rod linkages that connect the steering control to the pump control arms until the wheels stop, or creep slightly in reverse.

f) To adjust each linkage, loosen the jam nut next the ball joint at the upper end of the linkage rod assembly. Then rotate the assembly using a wrench to turn the double nuts on the assembly. See Figure 13.

g) Re-tighten the jam nut against the ball joint on each side.

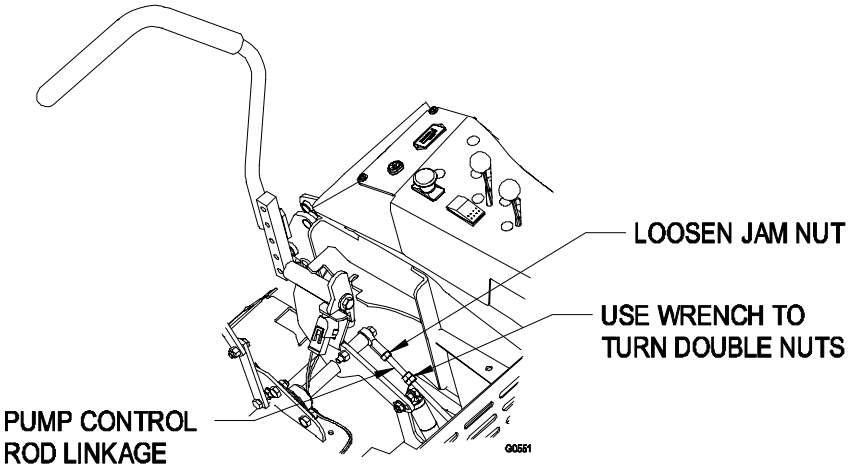


FIGURE 13

h) Move the motion control levers to the reverse position. Return the motion control levers to neutral. The wheels must stop turning (or slightly creep in reverse).

i) Stop engine and wait for all moving parts to stop. Remove jumper wire from wire harness connector and plug connector into seat switch.

j) Lower from jackstands.

4.2.6 Reverse Indicator Adjustment:

a) Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

b) Tilt seat forward.

c) Begin with either the left or right motion control lever. Move lever to the neutral position and pull lever back until the clevis pin (on arm below pivot shaft) contacts the end of the slot (just beginning to put pressure on spring), See Figure 14.

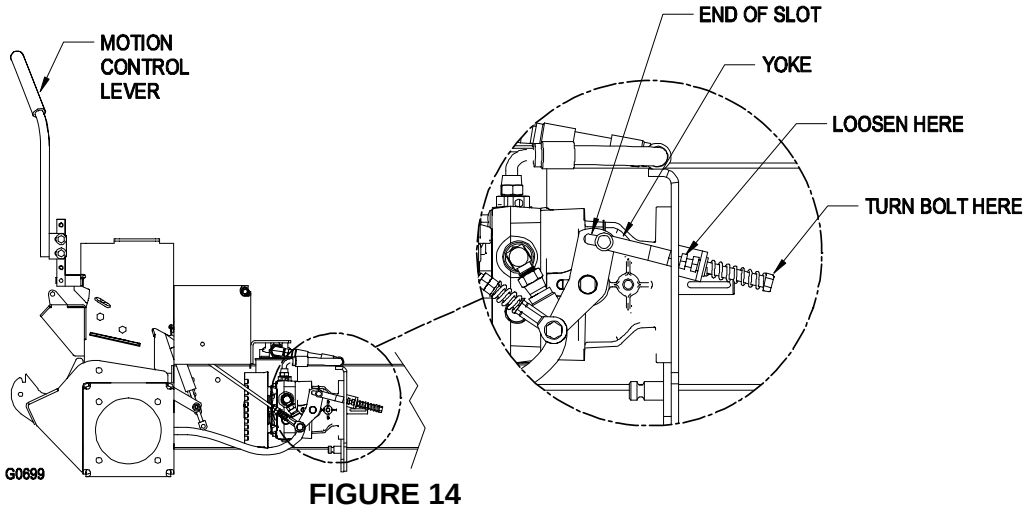


FIGURE 14

d) Check where lever is relative to notch in neutral plate (should be centered allowing lever to pivot outward to the neutral lock position).

e) If adjustment is needed, loosen the nut against the yoke and while applying slight rearward pressure on the motion control lever, turn the head of the adjustment bolt in the appropriate direction until lever is centered (keeping rearward pressure on the lever will keep the pin at the end of the slot and allow the adjustment bolt to move the lever to the appropriate position). Tighten lock nut.

f) Repeat on opposite side of unit.

4.2.7 Weight transfer spring adjustment:

Weight transfer springs are assembled from the factory to apply the maximum amount of weight onto the drive wheels. This setting provides the greatest amount of traction. Some conditions may require the rear wheel lift to be reduced. This can be done by reducing the amount to weight transfer, which will increase the amount of weight on the front and rear castors.

a) To adjust the left weight transfer spring, rotate the left motion control arm up and into the operation position.

b) Locate and loosen the knob under the rear of the left fender. See Figure 15.

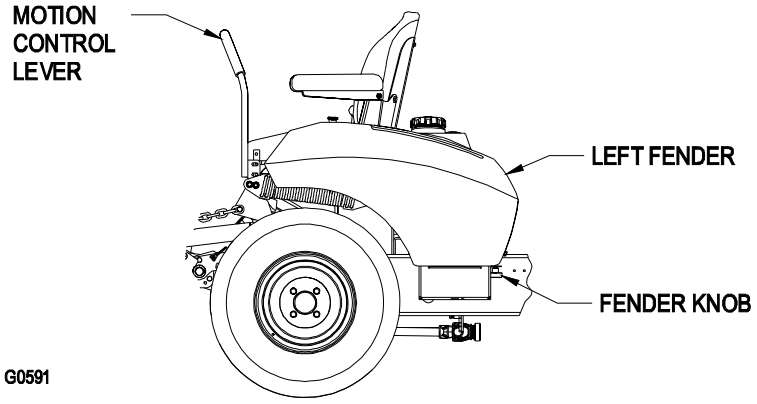


FIGURE 15

c) Slide the fender forward and twist upward and outward to remove.

d) To adjust the weight transfer springs, fold the mower deck and front frame and lock in service position. See Deck Manual for complete instructions.

WARNING
POTENTIAL HAZARD ♦ Weight transfer springs may have stored energy.
WHAT CAN HAPPEN ♦ Removing the weight transfer springs without releasing the stored energy can cause serious injury
HOW TO AVOID THE HAZARD ♦ Fold mower deck and front frame and lock in service position to remove spring tension and release stored energy before performing any maintenance or adjustments on the weight transfer springs. (See Deck Manual for Deck Raising instructions)

e) Remove the retaining ring and washer at either end of the weight transfer spring that retains it to the transfer bellcrank pins and/or weight transfer spring anchor pins. See Figure 16.

f) Pull the spring off of front or rear pin and re-install in the outer hole, to reduce the spring force. Re-install the washer and retaining ring.

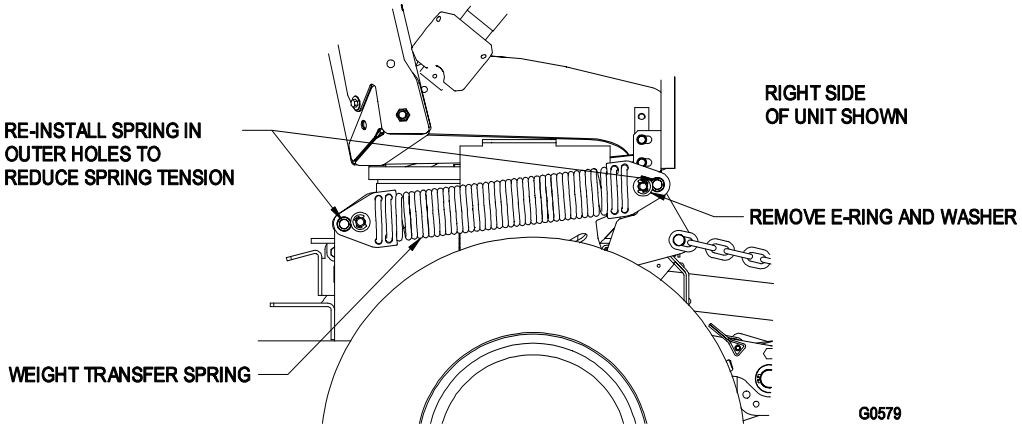


FIGURE 16

g) Re-install the left fender.

h) To adjust right side, raise the unit and place on jackstands, remove wheel and repeat steps steps d) through f).

CAUTION
POTENTIAL HAZARD ♦ Raising the unit for service or maintenance relying solely on mechanical or hydraulic jacks could be dangerous.
WHAT CAN HAPPEN ♦ The mechanical or hydraulic jacks may not be enough support or may malfunction allowing the unit to fall, which could cause injury.
HOW TO AVOID THE HAZARD ♦ DO NOT rely solely on mechanical or hydraulic jacks for support. Use adequate jack stands or equivalent

4.2.8 Rear caster pivot bearings pre-load adjustment:

a) Remove dust cap from caster and tighten nyloc nut until washers are flat. Back the nyloc off 1/4 of a turn to properly set the pre-load on the bearings.

Note: If disassembled, make sure the spring washers are reinstalled as shown in Figure 17.

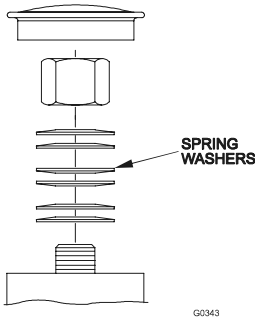


FIGURE 17

5. WASTE DISPOSAL

5.1 MOTOR OIL DISPOSAL

Engine oil and hydraulic oil are both pollutants to the environment. Dispose of used oil at a certified recycling center or according to your state and local regulations.

5.2 BATTERY DISPOSAL

DANGER
POTENTIAL HAZARD ♦ Battery electrolyte contains sulfuric acid, which is poisonous and can cause severe burns
WHAT CAN HAPPEN ♦ Swallowing electrolyte can be fatal or if it touches skin can cause severe burns.
HOW TO AVOID THE HAZARD ♦ Wear safety glasses to shield eyes, and rubber gloves to protect skin and clothing when handling electrolyte. ♦ Do not swallow electrolyte.

Federal law states that batteries should not be placed in the garbage. Management and disposal practices must be within relevant federal, state, or local laws.

If a battery is being replaced or if the unit containing the battery is no longer operating and is being scrapped, take the battery to a local certified recycling center. If no local recycling is available return the battery to any certified battery reseller.

6. TROUBLE SHOOTING

6.1 MOWER PULLS LEFT OR RIGHT (W/LEVERS FULLY FORWARD).

a) Refer to Tracking Adjustment Section 4.2.5.

b) Check air pressure in drive tires.

AT101 (Bar Lug) drive tires should be inflated to 9 psi (62 kpa).

Turf Mate drive tires should be inflated to 13 psi (90 kpa).

Semi-pneumatic casters do not require inflation.

6.2 MOWER CUTS UNEVENLY.

a) Check air pressure in drive tires.

AT101 (Bar Lug) drive tires should be inflated to 9 psi (62 kpa).

Turf Mate drive tires should be inflated to 13 psi (90 kpa).

Semi-pneumatic casters do not require inflation.

A more uniform cutting height may be obtained with higher tire pressure on rough terrain. A lower tire pressure provides more flotation.

b) Check deck leveling (See Adjustments in Deck Manual).

Note: The front of the mower deck will be approximately 1/4" lower than the back of the mower deck. This is the "rake" of the deck.

c) Check the distance from the bottom edge of the deck skirt to the tip of each blade. Measurement should be consistent between all blade tips.

6.3 ENGINE WILL NOT START.

a) Make sure the battery has a full charge. See section 4.1.3 for charging instructions.

b) Be sure the throttle control is in the correct position. See section 3.3.2.

c) Make sure there is fuel in the fuel tank.

d) Make sure the parking brake is set and motion control levers in the neutral position.

e) Check that the PTO is disengaged.

f) Check for loose or faulty wiring connections.

g) Check for corrosion at all wiring connections. Even minor corrosion may cause a faulty connection. Clean connector terminals thoroughly with electrical contact cleaner, apply dielectric grease and reconnect.

NOTE: When disconnecting electrical connectors *DO NOT* pull on the wires to separate the connectors.

NOTE: After carefully checking the above steps, attempt to start the engine. If it does not start, contact your authorized Exmark service dealer.

IMPORTANT: It is essential that all operator safety mechanisms be connected and in proper operating condition prior to mower use.

When a problem occurs, do not overlook the simple causes. For example: starting problems could be caused by an empty fuel tank.

The following table lists some of the common causes of trouble. Do not attempt to service or replace major items or any items that call for special timing of adjustments procedures (such as valves, governor, etc.). Have this work done by your **Engine Service Dealer.**

TROUBLESHOOTING TABLE

PROBLEM	NO FUEL	IMPROPER FUEL	WATER OR DIRT IN FUEL LINE	DIRTY AIR FILTER	ENGINE OVERLOADED	BLOCKED FUEL FILTERS	INCORRECT OIL LEVEL	INSUFFICIENT BATTERY CHARGE	FAN PUMP BELT MISSING	DIRTY RADIATOR CORE
Will not start	X	X	X	X		X		X		
Hard starting	X	X	X	X		X		X		
Stops suddenly	X		X	X	X	X				
Lacks power		X	X	X	X	X				
Operates erratically		X	X	X	X	X				
Skips or misfires		X	X	X						
Overheats				X	X		X		X	X
High fuel consumption				X	X					

6.4 ENGINE WARNING SYSTEMS

6.4.1 Alternator Charging Light: Located to the rear of the key switch. Light will come on when the alternator is not charging.

6.4.2 Low Oil Pressure Light: Located to the rear of the key switch with the alternator light. Light will come on when engine oil pressure is low or lost.

6.4.3 Glow Plug Light: Located on the right fuel tank console. The glow plug light comes on when the glow plugs are preheating the combustion chamber. This happens when the glow switch is depressed and while the engine is cranking.

6.4.4 Coolant Temperature Light: Located on the right fuel tank console. The light will come on if the engine is overheating.

6.4.5 Warning Buzzer: Located behind the seat under the engine cover on the right hand side of the engine fan shroud. The buzzer is a warning signal for the following circumstances:

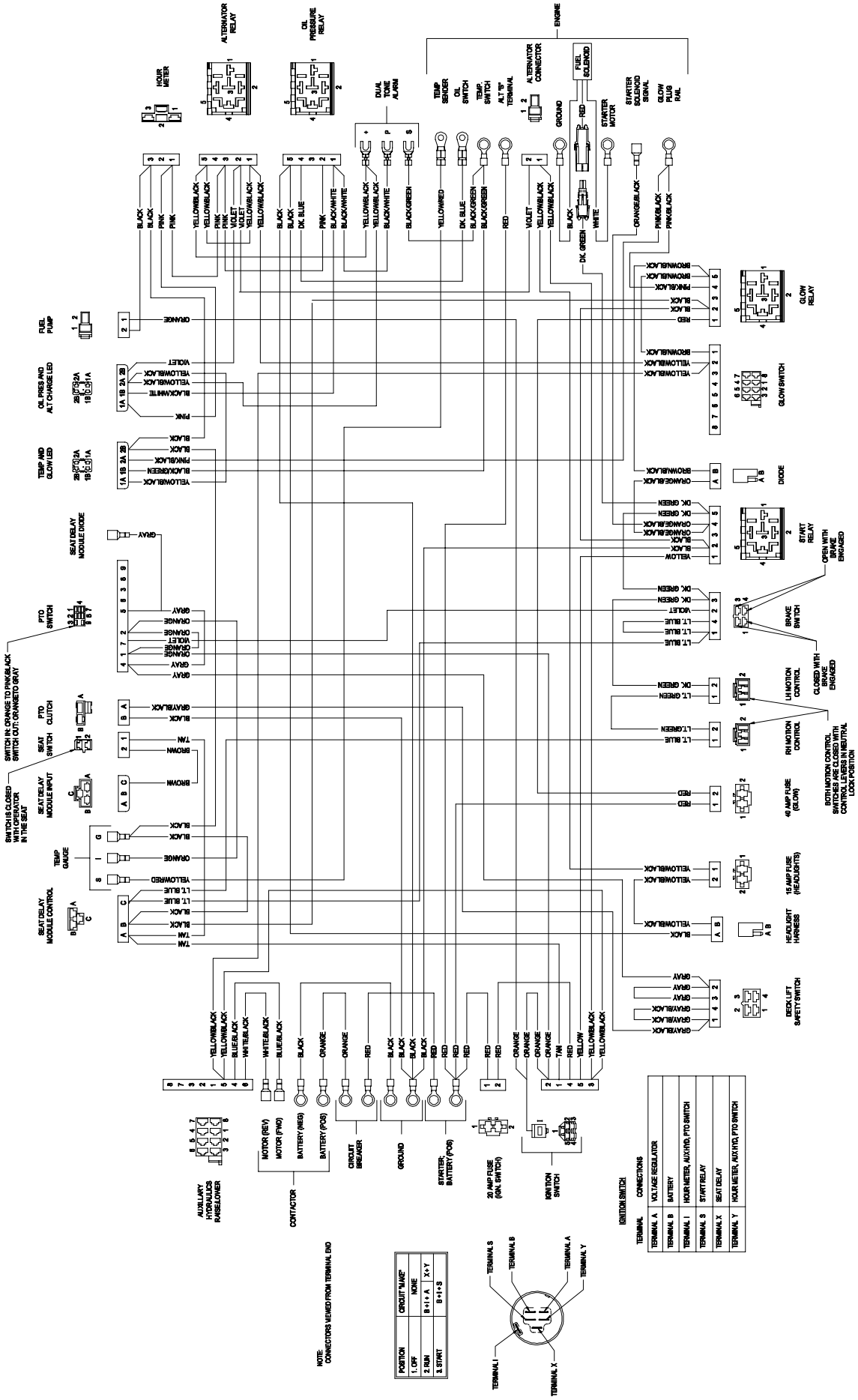
a) When the engine is running and the buzzer emits a continuous beep, the buzzer is warning the user that the engine is overheating. Perform the following steps.

1. Disengage the mower blades, and idle down the engine.
2. Look at the temperature gauge to determine if temperature continues to increase. If it does, turn the unit off and allow the engine and engine components to cool.
3. Check the coolant level. If necessary fill with coolant as described in Section 4.1.2.
4. Remove any debris on or around the radiator that may restrict airflow.
5. Check to see if the water pump/alternator belt is intact. If belt is missing, do not run unit, as unit can overheat and damage the engine. See Engine Service Dealer.

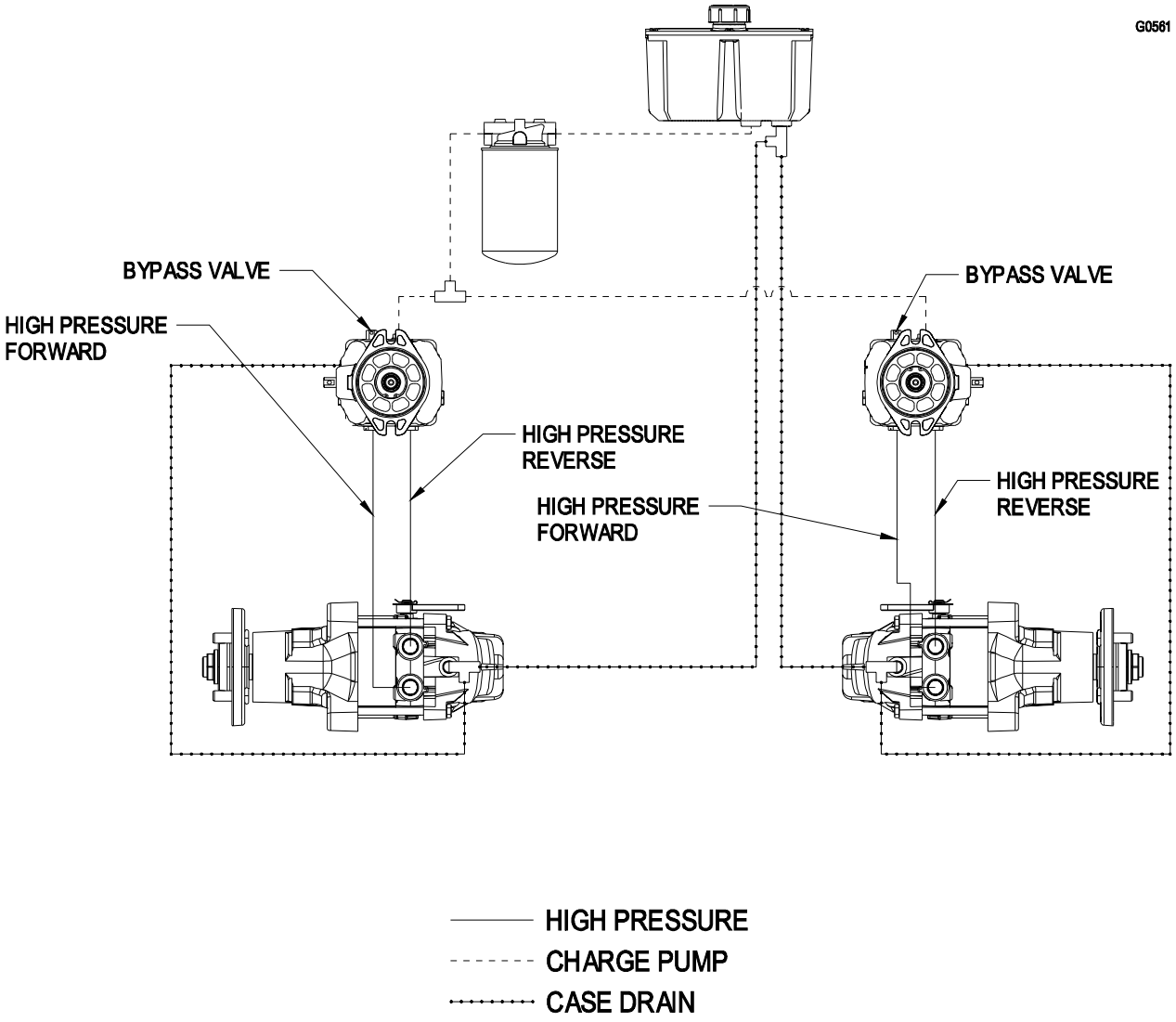
b) When the engine is running and the buzzer emits intermittent beeps, the buzzer is warning the user that the engine oil pressure is low. Perform the following steps.

1. Turn the unit off, allow the engine and engine components to cool.
2. Check the oil level and fill, if necessary, as described in Section 4.1.1.
3. Check for oil leaking from engine. If the engine is leaking, see Engine Service Dealer.

7. ELECTRICAL DIAGRAM



8. HYDRAULIC DIAGRAM



9.

2-Year Limited Warranty
Exmark Turf Equipment

(For units purchased on or after October 1, 2004)

Conditions and Products Covered

Exmark Mfg. Co. Inc. and its affiliate, Exmark Warranty Company, pursuant to an agreement between them, jointly warrant on the terms and conditions herein, that we will repair, replace or adjust any part manufactured by Exmark and found by us (in the exercise of our reasonable discretion) to be defective in factory materials or workmanship for a period of two years.

This warranty applies to Exmark turf equipment purchased on or after October 1, 2004 sold in the US or Canada. This warranty may only be assigned or transferred to a second (or third) owner by an authorized Exmark dealer. The warranty period commences upon the date of the original retail purchase.

Products	Warranty Period
• All Products (except as noted below)	2 years
• All Attachments and Accessories	1 year
• Metro 21 and Metro 26 Series	1 year
• Belts and Tires	90 days
• Battery	1 Year Prorated
• Engine*	Warranty is covered by engine manufacturer

*Please refer to the engine manufacturer's warranty statement that is included in the literature packet. We are not authorized to handle warranty adjustments on engines.

This warranty only includes the cost of parts and labor.

Items and Conditions Not Covered

This warranty does not cover the following:

- Pickup and delivery charges to and from any authorized Exmark Service Dealer.
- Any damage or deterioration due to normal use, wear and tear, or exposure.
- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, tune-up parts, and adjustments.
- Any product or part which has been altered or misused or required replacement or repair due to normal wear, accidents, or lack of proper maintenance.
- Any repairs necessary due to use of parts, accessories or supplies, including gasoline, oil or lubricants, incompatible with the turf equipment or other than as recommended in the operator's manual or other operational instructions provided by Exmark.

All warranty work must be performed by an authorized Exmark Service Dealer using Exmark approved replacement parts.

Instructions for Obtaining Warranty Service

1. Contact any Exmark Service Dealer to arrange service at their dealership. To locate a dealer convenient to you, access our website at www.exmark.com. U.S. Customers may also call 402-223-6375.
2. Bring the product and your proof of purchase (sales receipt) to the Exmark Service Dealer.

If for any reason you are dissatisfied with the Service Dealer's analysis or with the assistance provided, contact us at:

Exmark Customer Service Department
The Exmark Warranty Company
2101 Ashland Avenue
Beatrice, NE 68310
402-223-6375 or
service@exmark.com

Owner's Responsibilities

The Exmark turf equipment, including any defective part, must be returned to an authorized Exmark service dealer within the warranty period. This warranty extends only to turf equipment operated under normal conditions. You must properly service and maintain your Exmark product as described in the operator's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

As a condition to this warranty, customer shall have read the operator's manual and shall have completed and submitted to Exmark Warranty Company, within the prescribed time, the Exmark warranty registration.

General Conditions

The sole liability of Exmark and Exmark Warranty Company with respect to this warranty shall be repair and replacement as set forth herein. **Neither Exmark nor Exmark Warranty Company shall have any liability for any other cost, loss or damage, including but not limited to, any incidental or consequential loss or damage.**

In particular, we shall have no liability or responsibility for:

- Expenses related to gasoline, oil or lubricants.
- Travel time, overtime, after hours time or other extraordinary repair charges or charge relating to repairs or replacements outside of normal business hours at the place of business of the authorized Exmark service dealer.
- Rental of like or similar replacement equipment during the period of any warranty, repair or replacement work.
- Any telephone or telegram charges or travel charges.
- Loss or damage to person or property other than that covered by the terms of this warranty.
- Any claims for lost revenue, lost profit or additional cost as a result of a claim of breach of warranty.
- Attorney's fees.

No Claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Exmark mower.

There are no understandings, agreements, representations, or warranties, express or implied, including but not limited to any regarding the merchantability (that product is fit for ordinary use) or fitness for use (that product is fit for a particular purpose), not specified herein, respecting the equipment which is the subject of this warranty.

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

10. Evaporative Emission Control Warranty Statement

California Evaporative Emission Control Warranty Statement
Your Warranty Rights and Obligations

Introduction

The California Air Resources Board and Exmark Manufacturing Company are pleased to explain the evaporative emission control system's warranty on your 2006 model year equipment. In California, new equipment that uses small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. Exmark Manufacturing Company must warrant the evaporative emission control system on your equipment for two years provided there has been no abuse, neglect or improper maintenance of your equipment.
Your evaporative emission control system may include parts such as: fuel lines, fuel line fittings, and clamps.

Manufacturer's Warranty Coverage:

This evaporative emission control system is warranted for two years. If any evaporative emission-related part on your equipment is defective, the part will be repaired or replaced by Exmark Manufacturing Company.

Owner's Warranty Responsibilities:

- As the equipment owner, you are responsible for performance of the required maintenance listed in your Operator's Manual. Exmark Manufacturing Company recommends that you retain all receipts covering maintenance on your equipment, but Exmark Manufacturing Company cannot deny warranty solely for the lack of receipts.
- As the equipment owner, you should however be aware that Exmark Manufacturing Company may deny you warranty coverage if your emission warranty parts have failed due to abuse, neglect, or improper maintenance or unapproved modifications.
- You are responsible for presenting your equipment to an Authorized Service Dealer as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If you have a question regarding your warranty coverage, you should contact Exmark Manufacturing Company at 1-402-223-6375.

Defects Warranty Requirements:

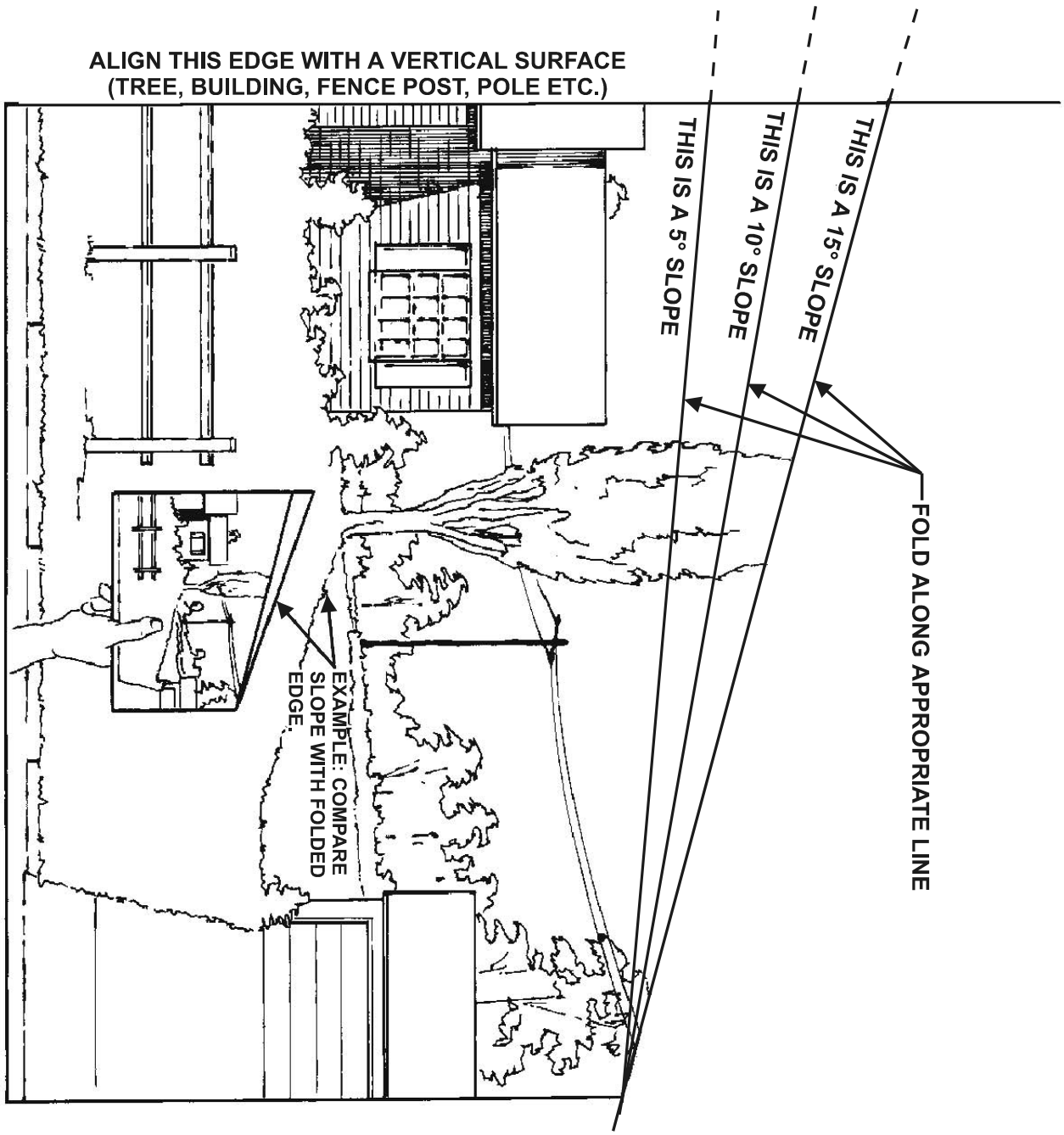
1. The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser.
2. General Evaporative Emissions Warranty Coverage. The emission warranty parts must be warranted to the ultimate purchaser and any subsequent owner that the evaporative emission control system when installed was:
   A. Designed, built, and equipped so as to conform with all applicable regulations; and
   B. Free from defects in materials and workmanship that causes the failure of a warranted part for a period of two years.
3. The warranty on evaporative emissions-related parts will be interpreted as follows:
   A. Any warranted part that is not scheduled for replacement as required maintenance in the written instructions must be warranted for the warranty period of two years. If any such part fails during the period of warranty coverage, it must be repaired or replaced by Exmark Manufacturing Company. Any such part repaired or replaced under the warranty must be warranted for a time not less than the remaining warranty period.
   B. Any warranted part that is scheduled only for regular inspection in the written instructions must be warranted for the warranty period of two years. A statement in such written instructions to the effect of "repair or replace as necessary" will not reduce the period of warranty coverage. Any such part repaired or replaced under warranty must be warranted for a time not less than the remaining warranty period.
   C. Any warranted part that is scheduled for replacement as required maintenance in the written instructions must be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part must be repaired or replaced by Exmark Manufacturing Company. Any such part repaired or replaced under warranty must be warranted for a time not less than the remainder of the period prior to the first scheduled replacement point for the part.
   D. Repair or replacement of any warranted part under the warranty provisions of this article must be performed at no charge to the owner at an Authorized Service Dealer.
   E. Notwithstanding the provisions of subsection (D) above, warranty services or repairs must be provided at an Authorized Service Dealer.
   F. The owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at an Authorized Service Dealer.
   G. Throughout the evaporative emission control system's two year warranty period, Exmark Manufacturing Company must maintain a supply of warranted parts sufficient to meet the expected demand for such parts.
   H. Manufacturer approved replacement parts must be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of Exmark Manufacturing Company.
   I. The use of any add-on or modified parts will be grounds for disallowing a warranty claim made in accordance with this article. Exmark Manufacturing Company will not be liable under this Article to warrant failures of warranted parts caused by the use of an add-on or modified part.
   J. Exmark Manufacturing Company shall provide any documents that describe the warranty procedures or policies within five working days of request by the Air Resources Board.

Emission Warranty Parts List:

The following list includes the parts covered under this warranty:

- Fuel Lines
- Fuel Line Fittings
- Clamps

NOTES


ALIGN THIS EDGE WITH A VERTICAL SURFACE
(TREE, BUILDING, FENCE POST, POLE ETC.)
THIS IS A 5° SLOPE
THIS IS A 10° SLOPE
THIS IS A 15° SLOPE
FOLD ALONG APPROPRIATE LINE
EXAMPLE: COMPARE SLOPE WITH FOLDED EDGE.

SEE EXMARK'S COMPLETE LINE OF ACCESSORIES

RIDING ACCESSORIES

CUSTOM RIDE SEAT SUSPENSION SYSTEM
DECK LIFT ASSIST KIT
HITCH KIT
LIGHT KIT
MICRO-MULCH SYSTEM
ROLL OVER PROTECTION SYSTEM (ROPS)
SNOW BLADE
SUN SHADE
TRASH CONTAINER
TURF STRIPER
ULTRA VAC COLLECTION SYSTEM
ULTRA VAC QUICK DISPOSAL SYSTEM

WALK BEHIND ACCESSORIES

GRASS CATCHER
MICRO-MULCH SYSTEM
STEERABLE SULKY
SULKY HITCH KIT
TURF STRIPER
STANDON

Check us out on the Web:
www.exmark.com

WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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